Vantage Titan

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

THESE TOSHIBA PLANS ARE FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN THAT AGREED UPON BETWEEN TOSHIBA AND THE CUSTOMER. THESE SITE PLANS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.

DATE: **01-07-08**

SCALE: **NOT TO SCALE**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

C1

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

PROJECTS: _____ SITE INSPECTION DATE: _____

EQUIPMENT DELIVERY DATE: _____ INSPECTED BY: _____

IN ORDER TO ENSURE A TIMELY AND SUCCESSFUL INSTALLATION, IT IS NECESSARY TO COMPLETE THIS FORM PRIOR TO INSTALLATION. PLEASE ASSIST US BY HAVING THE CONTRACTOR OR YOUR REPRESENTATIVE COMPLETE THE FOLLOWING:

___ 1. ALL WALLS, FLOORS, AND CEILINGS FINISHED. WALLS PAINTED, FLOORS TILED, AND CEILING GRID WORK AND FIXTURES INSTALLED.

___ 2. MONOLITHIC OR LAY–IN CEILING? PLEASE CIRCLE ONE. ALL MATERIALS IN SCAN ROOM MUST BE NON–FERROUS.

___ 3. DOORS AND WINDOWS INSTALLED AND LOCKABLE. DOORS TO BE REMOVED PRIOR TO DELIVERY BY CUSTOMER OR CONTRACTOR AND REINSTALLED AFTER EQUIPMENT MOVE–IN. RESERVE SECURE ROOM FOR STORAGE DURING INSTALLATION.

___ 4. AREA SET ASIDE FOR EQUIPMENT RIGGING AND MOVE–IN (INCLUDING MAGNET OPENING IN SCAN ROOM). ENVIRONMENTAL ISSUES ADDRESSED AND RESOLVED PRIOR TO EQUIPMENT DELIVERY. RECEPTACLE FOR TRASH AVAILABLE (LARGE ENOUGH FOR SHIPPING CRATES IF REQUIRED). EQUIPMENT (ENGRESS) ROUTES ARE CLEAR AND OBSTACLE FREE.

___ 5. ALL CONDUIT, TROUGHING (WITH COVERS), AND BOXES INSTALLED (CLEAN AND DUST FREE). GROMMETED OPENINGS, CHASE NIPPLES AND RACEWAY DIVIDERS, ETC., COMPLETE.

___ 6. INCOMING POWER (PER POWER QUALITY REQUIREMENTS) OPERATIONAL AND CONNECTED TO ROOM BREAKER(S).

___ 7. LOCATION OF ALL ELECTRICAL BREAKERS IN POWER CHAIN NOTED.

___ 8. ALL CONTRACTOR–INSTALLED STRUCTURAL SUPPORT DEVICES INSTALLED AND LEVELED ACCORDING TO TAMS SPECIFICATIONS ON SITE PLANS.

___ 9. ALL CONTRACTOR–SUPPLIED CABLES PULLED AND TERMINATED, INCLUDING GROUND WIRE IN TROUGHING AS SPECIFIED IN THE TOSHIBA SITE PLANS.

___ 10. DUST–FREE ENVIRONMENT IN ALL RELATED ROOMS.

___ 11. HEATING AND AIR–CONDITIONING INSTALLED, OPERATIONAL AND STABILIZED PER TOSHIBA SITE PLANS. FILTERS TO BE CHANGED 24 HOURS BEFORE DELIVERY.

___ 12. ALL MILLWORK COMPLETE AND INSTALLED. ENSURE USE NON–FERROUS MATERIAL FOR ANY MILLWORK IN SCAN ROOM.

___ 13. COMPUTER FLOORING INSTALLED, IF APPLICABLE.

___ 14. ALL UNFINISHED AREAS SEALED OFF TO PREVENT DUST CONTAMINATION.

___ 15. RECEPTACLE FOR TRASH AVAILABLE (LARGE ENOUGH FOR SHIPPING CRATES IF REQUIRED).

___ 16. "PCDU" INSTALLED AND OPERATIONAL.

___ 17. PENETRATION PANEL INSTALLED IN SCAN ROOM.

___ 18. RF ROOM COMPLETE AND TESTED. PROVIDED COPY OF SIGNED TEST RESULTS TO SITE PLANNING.

___ 19. ALL REQUIRED WAVE GUIDES INSTALLED (INCLUDING MED–GASES, IF APPLICABLE).

___ 20. PLUMBING FOR CHILLER AND CRYO COOLER INSTALLED FLUSHED AND TESTED.

___ 21. SEISMIC REQUIREMENTS, AND REQUIRED SEISMIC ANCHORING DEVICES INSTALLED (IF APPLICABLE).

___ 22. NETWORK CONNECTIONS INSTALLED AND OPERATIONAL.

___ 23. QUENCH PIPE INSTALLED PER TOSHIBA SPECIFICATIONS (SEE SHEETS M1 & M4). USE ONLY ALUMINUM OR STAINLESS STEEL MATERIAL FOR THE QUENCH PIPE AS WE SHOWN ON PLAN.

___ 24. ALL APPLICABLE PERMITS OBTAINED.

___ 25. MAGNETIC/RF SHIELDING DESIGNED, MODELED, AND BUILT.

___ 26. CHILLER PAD POURED & CURED PER CUSTOMER/CONTRACTOR.

___ 27. ALL MATERIALS IN SCAN ROOM MUST BE NON–FERROUS.

___ 28. CLEAN WORK AREA SET ASIDE OUTSIDE PROCEDURE ROOM DOOR AND CONTROL AREA.

IF ITEMS LISTED ARE NOT COMPLETED, INSTALLATION TIME WILL INCREASE OR INSTALLATION START DELAYED.

COMMENTS: _____

_____

SIGNED
TOSHIBA: _____

CONTRACTOR: _____

CUSTOMER: _____

REVISED: 10–11–07

1 MIN. SITE REQUIREMENTS CHECKLIST

PLUMBING NOTES:

A. IT IS THE CUSTOMER'S RESPONSIBILITY TO INSTALL THE DRAKE CHILLER.

B. FOR A 2 LOOP CHILLER SYSTEM (INDOOR UNIT, OUTDOOR UNIT) THE CUSTOMER'S CONTRACTOR SHOULD INSTALL THE INDOOR UNIT IN THE EQUIPMENT ROOM AND THE OUTDOOR UNIT ACCORDING TO THE DRAKE CHILLER INSTALLATION MANUAL.

C. THE CUSTOMER'S CONTRACTOR WILL COMPLETE ALL ELECTRICAL AND PLUMBING AS DESCRIBED IN THE CHILLER INSTALLATION MANUAL.

D. THE TAMS ZONE SERVICE OFFICE SHOULD SCHEDULE THE CHILLER START UP WITH JOHNSON CONTROLS. THE DRAKE CHILLER PACKAGE INCLUDES CHILLER START UP AND A PM ON THE CHILLER AT 6 MONTHS (BOTH OF THESE ITEMS ARE PERFORMED BY JOHNSON CONTROLS / TRANE AND ARE PREPAID WITH EACH ORDER).

E. IT IS THE RESPONSIBILITY OF THE CUSTOMER'S PLUMBER TO FILL THE CHILLER RESERVOIR AND PIPING WITH THE 60/40 GLYCOL MIXTURE (PROVIDED BY TAMS). THE CHILLER RESERVOIR AND PLUMBING SHOULD HOLD APPROXIMATEL 80–110 GALLONS DEPENDING ON THE LENGTH OF THE PLUMBING RUN.

F. CHILLER START UP (JOHNSON CONTROLS / TRANE) CONSISTS OF VERIFYING ALL CONNECTIONS, STARTING UP AND VERIFICATION OF CHILLER OPERATION. REFER TO DRAKE INSTALLATION MANUAL FOR CORRECT REFRIGERATION LINE SIZE IN ACCORDANCE WITH CHILLER MODEL NUMBER (EST/SPLIT SYSTEMS ONLY).

NOTE:

G. ANCHORING OF DRAKE CHILLER IS THE RESPONSIBILITY OF THE CUSTOMER/CONTRACTOR.

REVISED: 10–30–07

ELECTRICAL NOTES:

A. THESE SITE PLANS ARE INTENDED TO DEPICT ONLY A CONCEPT OF THE ELECTRICAL REQUIREMENTS FOR THE TOSHIBA EQUIPMENT. THE DESIGN OF ALL ELECTRICAL ELEMENTS MUST BE SPECIFIED BY A LICENSED ELECTRICAL ENGINEER IN ACCORDANCE WITH TOSHIBA SPECIFICATION AND ALL APPLICABLE CODES.

B. IN ACCORDANCE WITH NEC ARTICLE 517–72(B), THE EQUIPMENT CIRCUIT BREAKER(S) MUST BE LOCATED SO THAT THEY SHALL BE OPERABLE FROM A LOCATION READILY ACCESSIBLE FROM THE CONTROL AREA. IF THIS IS IMPOSSIBLE OR IMPRACTICAL, THE USE OF A SHUNT TRIP TYPE BREAKER WILL BE NECESSARY TO SATISFY THIS REQUIREMENT. THE EMERGENCY OFF BUTTON FOR THE SHUNT TRIP SHOULD BE LOCATED IN THE CONTROL AREA.

C. THE CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL ALL CIRCUIT BREAKERS, CONDUITS, JUNCTION BOXES, DUCTS, A/C POWER RECEPTACLES, THERMOSTATS, EMERGENCY OFF BUTTONS, AND 12 VOLT POWER, ETC. SPECIFIED HEREIN.

D. THE TOSHIBA SITE PLANS DO NOT SPECIFY ELECTRICAL REQUIREMENTS FOR EQUIPMENT NOT SOLD BY TOSHIBA. THESE REQUIREMENTS MUST BE OBTAINED FROM THE VENDOR.

E. TOSHIBA WILL SUPPLY INTERCONNECTING CABLES FOR THE TOSHIBA EQUIPMENT. TOSHIBA WILL INSTALL IF LOCAL TRADE LABOR PERMITS.

F. TOSHIBA WILL PROVIDE CONNECTING AND FILTER PANELS TO RF PROVIDER FOR INSTALLATION. EXCEPT FOR THEIR USE IN POWER LINE CONNECTIONS TO EQUIPMENT CABINETS FLEXIBLE CONDUIT SHALL NOT BE USED IN THIS INSTALLATION. ONLY FACTORY CONDUIT ELBOWS SHALL BE USED. DUCT WORK SHALL BE PROVIDED WITH SWEEP ELBOWS.

G. ALL JUNCTION BOXES AND DUCTS THAT PENETRATE THE FLOOR SHALL BE WATERPROOF TYPE AND PROVIDED WITH GASKETED WATERPROOF COVERS. ALL FLOOR JUNCTION BOXES AND DUCT COVERS SHALL BE CAPABLE OF SUPPORTING A 200 lb CONCENTRATED LOAD. ALL MATERIAL IN SCAN ROOM MUST BE NON FERROUS.

H. ALL ACCESS HOLES ARE TO BE MADE IN THE EQUIPMENT ROOM RAISED FLOOR PER TOSHIBA SITE PLANS. ACCESS HOLES MUST BE GROMMETED WITH NON–CHAFING MATERIAL SUCH AS RUBBER/PLASTIC OR SLEEVED WITH A SHORT NIPPLE WITH NON–ABRASIVE BUSHINGS.

J. ALL CHASE OPENINGS SHALL HAVE PLASTIC/NYLON BUSHINGS.
ALL WALL DUCTWORK SHALL HAVE A MINIMUM OF THREE COMPARTMENTS. TRANSITIONS SUCH AS HORIZONTAL TO VERTICAL WALL DUCT OR JUNCTION BOXES MUST BE REVIEWED ON AN INDIVIDUAL BASIS WITH THE TOSHIBA INSTALLATION COORDINATOR. LOCAL CODES MAY REQUIRE THE USE OF CROSS–OVER TUNNELS OR OTHER SUCH DEVICES TO MAINTAIN CABLES SEPARATION.

K. ALL DUCT AND CONDUITS SHALL BE ELECTRICALLY BONDED AS A GROUNDING PATH IN ACCORDANCE WITH NEC ARTICLE 517–13(B).

L. CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL GREENLEE NYLON MEASURING PULL STRING OR EQUIVALENT IN ALL CONDUITS AND CLOSED DUCTWORK.

M. CONDUIT RUNS SHOWN ARE SCHEMATIC ONLY. ALL CONDUIT RUNS MUST TAKE THE SHORTEST MOST DIRECT ROUTE POSSIBLE.

N. CONDUIT RUNS MAY HAVE A MAXIMUM OF (3) 90° BENDS.

P. 110VAC GROUNDED OUTLETS SHALL BE PROVIDED ON WALLS NEAR THE TOSHIBA EQUIPMENT FOR USE DURING EQUIPMENT SERVICE.

Q. CUSTOMER/CONTRACTOR MUST SUPPLY AND INSTALL ALL INCOMING POWER CABLES FROM CIRCUIT BREAKER(S) TO TOSHIBA EQUIPMENT CONNECTION POINT. CABLE TYPE MUST BE MT. MULTI–STRAND COPPER – NO ALUMINUM IS PERMITTED. CABLE SIZE MUST BE IN ACCORDANCE WITH TOSHIBA POWER QUALITY REQUIREMENTS.

R. CUSTOMER/CONTRACTOR IS TO SUPPLY AND INSTALL ALL NECESSARY HARDWARE TO ENCLOSE INCOMING POWER CABLES IN FLEXIBLE WATER TIGHT CONDUIT FROM CIRCUIT BREAKER(S) TO TOSHIBA EQUIPMENT CABINET(S).

S. ANY CHANGES IN THE LOCATION OR TYPE OF CONDUIT, DUCT WORK, JUNCTION BOXES, ETC. MUST BE SUBMITTED IN WRITING TO THE TOSHIBA INSTALLATION COORDINATOR FOR APPROVAL.

T. A SEPARATE CIRCUIT, FED FROM THE FACILITY RADIOLOGY PANEL OR A MAIN SERVICE PANEL IS REQUIRED. USE OF A SUB PANEL WITH LOADS SUCH AS ELEVATORS, HVAC, MOTORS, ETC., IS NOT PERMITTED.

REVISED: 01–09–06

RF ROOM GROUNDING:

A. WHEN INSTALLED BY THE RF/STEEL ROOM MANUFACTURER, THE RF ROOM MUST BE TOTALLY ISOLATED FROM FROM GROUND. TO MAINTAIN THIS ISOLATION, NO CONDUCTIVE CONNECTIONS (i.e. ELECTRICAL CONDUITS, PLUMBING, HVAC DUCTS, OR ANY CONDUCTIVE BUILDING MATERIALS) CAN BE MADE TO THE OUTSIDE OF THE RF ROOM. TO KEEP THIS INTEGRITY, ALL ABOVE MENTIONED CONNECTIONS SHOULD BE MADE VIA DIELECTRIC CONNECTORS, A DIELECTRIC CONNECTOR IS A NON SLEEVE, NIPPLE, GASKET, ETC. THIS CONNECTOR MUST BE INSTALLED IN ALL HVAC DUCT, ELECTRICAL CONDUIT, AND ANY PIPE CONNECTION TO THE RF ROOM. THE LOCATION OF THE DIELECTRIC IS TO BE OUTSIDE OF THE RF ROOM, AS CLOSE TO THE WALL OR CEILING OF THE RF ROOM AS PRACTICAL.

B. WHILE THE RF ROOM IS UNDER CONSTRUCTION, A BATTERY OPERATED BELL SHOULD BE TEMPORARILY MOUNTED TO THE ROOM. THE RF ROOM IS TO BE USED AS THE GROUND FOR THE BELL. IF ANY CONDUCTIVE MATERIAL CONTACTS THE RF ROOM, THE BELL WILL SOUND ALERTING THE FOREMAN AND/OR CONTRACTOR WHO GROUNDED THE ROOM.

C. DURING THE REMAINING CONSTRUCTION, A TEMPORARY #1 SAFETY GROUND SHOULD BE ATTACHED TO THE RF ROOM UNTIL THE "PCDU" IS INSTALLED. AT THAT TIME, A PERMANENT #1 OR LARGER GROUND WIRE SHOULD BE INSTALLED BETWEEN THE MAGNET ROOM AND THE SECONDARY GROUND BUS OF THE POWER SOURCE. REFER TO DETAIL 5 SHEET E3 (FINAL DRAWINGS ONLY).

D. RF ROOM MUST BE ACCESSIBLE FROM ABOVE FOR ENGINEERS TO FIND AND CORRECT RF GROUNDS IN ROOM.

REVISED: 10–11–07

GENERAL NOTES:

GENERAL

A. TOSHIBA RESERVES THE RIGHT TO CHANGE THESE DESIGNS AND SPECIFICATIONS WITHOUT NOTICE.

CUSTOMER/CONTRACTOR RESPONSIBILITY

B. CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL ALL MATERIALS AND OTHER FEATURES SPECIFIED IN THE TOSHIBA SITE PLANS. CUSTOMER/CONTRACTOR SHALL SUPPLY AND INSTALL ALL COUNTERTOPS, SINKS (REFER TO (1 / P1)), CASE WORK AND CABINETS SPECIFIED IN THE TOSHIBA SITE PLANS.

C. ANY CABINETRY THAT MAY BE REQUIRED TO HOUSE VIDEO RECORDERS, MONITORS KEYBOARDS, OR OTHER ANCILLARY EQUIPMENT SHALL BE SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR.

D. THESE TOSHIBA SITE PLANS DO NOT INDICATE EQUIPMENT REQUIREMENTS FOR ITEMS NOT SOLD BY TOSHIBA SUCH AS, PHYSIOLOGICAL MONITORS, LASER CAMERAS, INJECTORS, ETC. SPECIFICATIONS FOR THOSE ITEMS MUST BE OBTAINED FROM THE VENDOR AND INCLUDED IN THE DESIGN TOTALS.

E. IF REQUIRED, THE CUSTOMER/CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN INTERCOM SPEAKER SYSTEM BETWEEN THE EQUIPMENT ROOM, CONTROL ROOM, AND PROCEDURE ROOM.

F. THE CUSTOMER/CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL COSTS REQUIRED FOR THE ENGINEERING AND/OR REMOVAL OF ANY HAZARDOUS MATERIALS SUCH AS ASBESTOS.

G. CUSTOMER/CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN OPERATING PHONE IN THE CONTROL ROOM AT THE TIME TOSHIBA EQUIPMENT INSTALLATION BEGINS.

H. CUSTOMER/CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE LIGHTING FOR SERVICING OF EQUIPMENT IN ALL AREAS OF THE INSTALLATION.

J. PRIOR TO EQUIPMENT DELIVERY AND INSTALLATION, THE SITE MUST BE 100% COMPLETE, CLEAN AND FREE OF DUST. CUSTOMER/CONTRACTOR AND TOSHIBA INSTALLATION COORDINATOR MUST COMPLETE A SITE WALK THROUGH 1 WEEK PRIOR TO DELIVERY AND DETERMINE ACCEPTABILITY FOR DELIVERY.

K. CUSTOMER/CONTRACTOR/ARCHITECT SHALL BE RESPONSIBLE FOR PROVIDING THE ENTIRE NETWORKING AND COMMUNICATION SYSTEMS.

L. ALL MATERIAL IN SCAN ROOM MUST BE NON FERROUS.

RF / MAGNETIC SHIELDING

M. CUSTOMER/CONTRACTOR RESPONSIBLE FOR OBTAINING A SHIELDING VENDOR, TO MODEL, DESIGN, AND BUILD REQUIRED MAGNETIC AND RF SHIELDING.

N. GAUSS LINES IN THESE DRAWINGS ARE REPRESENTED WITHOUT MAGNETIC SHIELDING.

P. RF SHIELDING WEIGHT WILL VARY FROM SITE TO SITE. CUSTOMER'S STRUCTURAL ENGINEER MUST CONSULT WITH RF ENCLOSURE VENDOR FOR RF SHIELDING WEIGHTS.

Q. THE EXISTING/FUTURE STEEL INFORMATION WITH RELATIONSHIP TO MAGNET MUST BE PROVIDED TO SITE PLANNING FOR REVIEW (ALL SIDES OF THE ROOM, INCLUDING CEILING AND FLOOR).

R. ANY STEEL BENEATH THE MAGNET MUST BE LOCATED A MINIMUM OF 4'–7" FROM MAGNET ISOCENTER. SOME STEEL REBAR COULD BE ACCEPTABLE, CONSULT WITH TOSHIBA INSTALLATION COORDINATOR FOR APPROVAL OF ANY STEEL IN THIS CRITICAL AREA.

S. MAGNETOMETER SURVEY MUST BE PERFORMED BY TOSHIBA BEFORE SUBMITTING FINAL DRAWINGS (120V POWER IS REQUIRED FOR TOSHIBA TO BEGIN SURVEY. A MINIMUM OF 50' F IS REQUIRED FOR SURVEY AREA).

T. THE SHIELDING WORK IS REQUIRED TO SUPPRESS EXTERNAL LEAKAGE OF THE ELECTROMAGNETIC RADIATION GENERATED BY THE SYSTEM.

U. THE SHIELD MUST ATTENUATE ELECTROMAGNETIC RADIATION IN THE FREQUENCY BAND OF 63.86MHz ± 0.5MHz BY AT LEAST 90dB.

90dB OR MORE FROM 64.36 MHz TO 70 MHz
90dB OR MORE FROM 70 MHz TO 300 MHz
50 dB OR MORE FROM 300 MHz TO 350 MHz
40 dB OR MORE FROM 350 MHz TO 1 GHz

CODES AND PERMITS

V. THE CUSTOMER/CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES ARE COMPLIED WITH.

SITE CONDITIONS

W. DIMENSIONS TO WALLS AND OR OTHER ROOM FEATURES, EXCEPT FOR NOTED COLUMN AND BEAM CENTER LINES SHALL BE FROM FINISHED SURFACES.

PLUMBING

X. PLUMBING IS REQUIRED FOR CERTAIN COMPONENTS OF TOSHIBA EQUIPMENT.

TRANSPORT REQUIREMENTS

Y. EQUIPMENT INGRESS ROUTE MUST BE CHECKED PRIOR TO EQUIPMENT DELIVERY TO ENSURE THE LARGEST AND HEAVIEST ITEMS OF EQUIPMENT CAN BE ACCOMMODATED, DIMENSIONS OF CORRIDORS SHOULD BE NO LESS THAN 8'–0".

Z. RECOMMENDED ENTRANCE TO SCAN ROOM SHOULD BE NO LESS THAN 7'–3"W X 8'–6"H FOR EQUIPMENT DELIVERY. SPECIAL ARRANGEMENTS MAY BE NECESSARY FOR MAGNET DELIVERY, INCLUDING A LARGER OPENING IN THE RF SHIELDING.

AA. CONTACT THE TOSHIBA INSTALLATION COORDINATOR FOR DETAILS OF THE LARGEST AND HEAVIEST ITEMS OF EQUIPMENT FOR THIS INSTALLATION.

BB. THE MINIMUM WIDTH OF THE DELIVERY PATH, DOORS, CORRIDOR, ELEVATOR ETC. IS 42".

REVISED: 12–19–07

STRUCTURAL NOTES:

A. THESE SITE PLANS ARE INTENDED TO DEPICT ONLY A CONCEPT OF THE STRUCTURE REQUIRED FOR THE TOSHIBA EQUIPMENT. THE DESIGN OF ALL STRUCTURAL ELEMENTS MUST BE SPECIFIED BY A LICENSED STRUCTURAL ENGINEER IN ACCORDANCE WITH TOSHIBA SPECIFICATIONS AND ALL APPLICABLE CODES.

B. THE CUSTOMER/CONTRACTOR SHALL FIELD VERIFY ALL EXISTING AND PROPOSED DIMENSIONS AND SITE CONDITIONS PRIOR TO COMMENCING CONSTRUCTION.

C. THE TOSHIBA INSTALLATION COORDINATOR SHALL BE NOTIFIED IN WRITING OF ANY FIELD CONDITIONS ENCOUNTERED THAT ARE CONTRADICTORY TO THOSE SHOWN IN THE TOSHIBA SITE PLANS.

D. THE DEMOLITION, FABRICATION AND ERECTION OF SUPPORT STRUCTURES FOR TOSHIBA EQUIPMENT SHALL BE PERFORMED BY THE CUSTOMER/CONTRACTOR IN ACCORDANCE WITH THE DESIGN AND SPECIFICATIONS SET FORTH BY THE STRUCTURAL ENGINEER OF RECORD.

E. VANTAGE MAGNET FEET MUST BE INSULATED/ISOLATED FROM SHIELDED ROOM.

F. INSULATION/ISOLATION FOR MAGNET FEET TO BE PROVIDED BY CUSTOMER/CONTRACTOR.

G. ALL STRUCTURAL MATERIAL IN SCAN ROOM MUST BE NON FERROUS.

H. IT'S RF VENDOR'S RESPONSIBLE TO ANCHORING THE MAGNET.

REVISED: 05–01–06

FLOOR LOADING

THE FLOOR MUST SUPPORT 11,904.96 lbs. FOR THE MAGNET, INCLUDING THE COVERS AND THE GRADIENT COIL. THE COMPLETE FLOOR MUST WITHSTAND A MAXIMUM CONCENTRATED MAGNET LOAD OF 3,796.04 lbs. PER SQUARE FOOT (2,976.24 lbs. PER MAGNET FOOT). THE FLOOR MUST BE ABLE TO WITHSTAND BOTH THE MAGNET AND THE WEIGHT OF THE MAGNETIC SHIELDING.

REVISED: 12–08–05

TOSHIBA

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **NOT TO SCALE**

DRAWN: **G.S.P.**

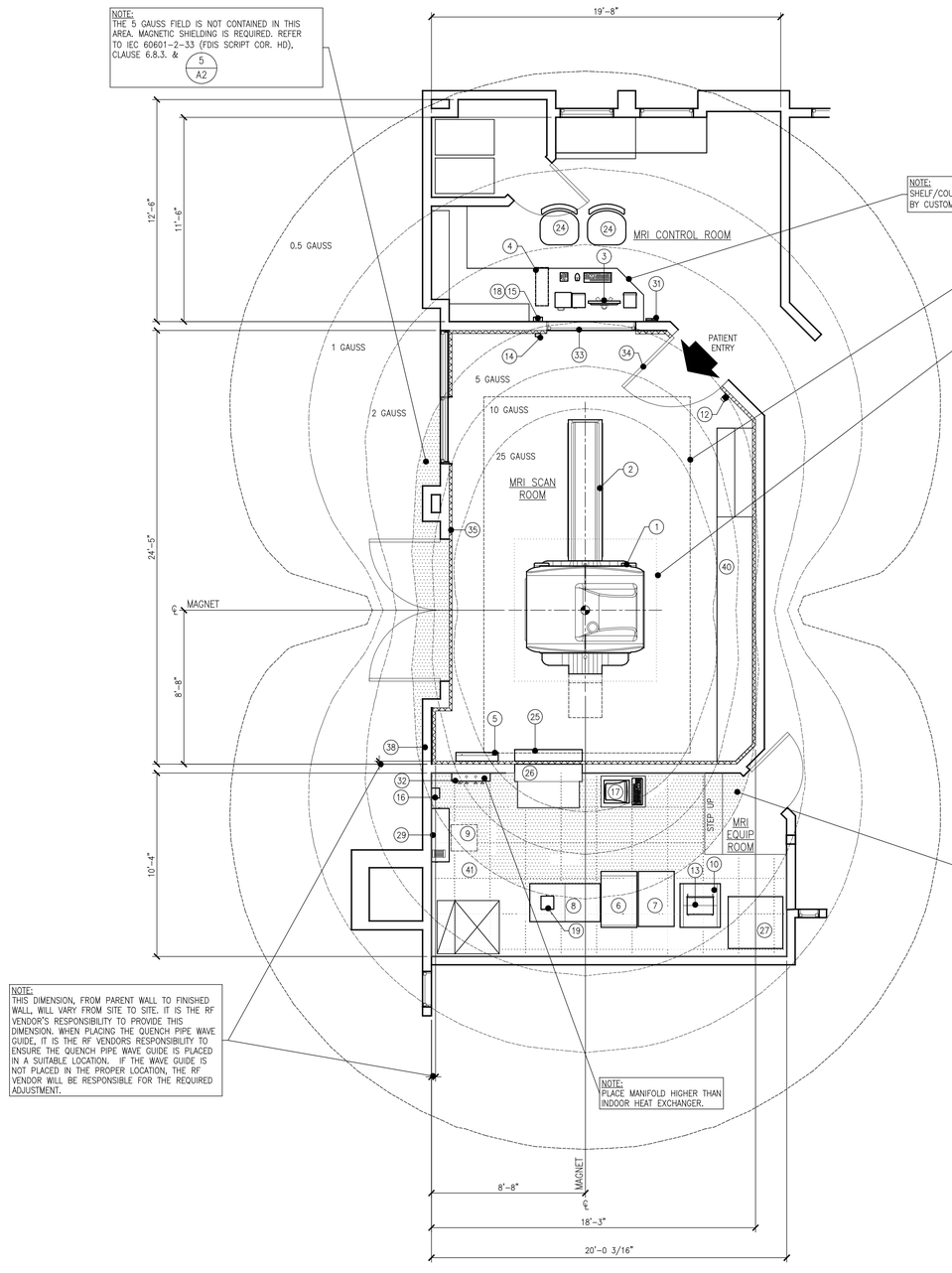
QUOTE: N/A

PROJECT NO.
TYPICALS

GN

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

NOTE:
ALL INFORMATION REGARDING THE INFORMATION ON THIS SHEET IS TO BE CONSIDERED PRELIMINARY AND TENTATIVE AND IS SUBJECT TO CHANGE OR REVISION WITHOUT PRIOR NOTICE.


NOTE: THE 5 GAUSS FIELD IS NOT CONTAINED IN THIS AREA. MAGNETIC SHIELDING IS REQUIRED. REFER TO IEC 60601-2-33 (FDIS SCRIPT COR. HD), CLAUSE 6.8.3. & 5 A2
19'-8"
12'-6"
11'-6"
24'-5"
10'-4"
8'-8"
0.5 GAUSS
1 GAUSS
2 GAUSS
5 GAUSS
10 GAUSS
25 GAUSS
MRI CONTROL ROOM
MRI SCAN ROOM
MRI EQUIP ROOM
STEP UP
PATIENT ENTRY
MAGNET
NOTE: SHELF/COUNTER PROVIDED BY CUSTOMER/CONTRACTOR.
NOTE: ALL EXISTING AND PROPOSED MAGNETIC STEEL PLACEMENTS (IN THE WALLS ONLY) MUST BE LOCATED OUTSIDE THIS EXCLUSION (11'-7 3/8" W X 20'-0 9/16" L).
NOTE: THIS 8'X8' AREA BENEATH MAGNET IS TO REMAIN FREE OF ANY FERROUS STEEL. REFER TO RF/MAGNETIC SHIELDING NOTE: 1/2 A2
NOTE: THIS DIMENSION, FROM PARENT WALL TO FINISHED WALL, WILL VARY FROM SITE TO SITE. IT IS THE RF VENDOR'S RESPONSIBILITY TO PROVIDE THIS DIMENSION. WHEN PLACING THE QUENCH PIPE WAVE GUIDE, IT IS THE RF VENDORS RESPONSIBILITY TO ENSURE THE QUENCH PIPE WAVE GUIDE IS PLACED IN A SUITABLE LOCATION. IF THE WAVE GUIDE IS NOT PLACED IN THE PROPER LOCATION, THE RF VENDOR WILL BE RESPONSIBLE FOR THE REQUIRED ADJUSTMENT.
NOTE: PLACE MANIFOLD HIGHER THAN INDOOR HEAT EXCHANGER.
6'-8"
18'-3"
20'-0 3/16"

EQUIPMENT LAYOUT

NOTE:
THE 5 & 10 GAUSS FIELDS ARE NOT CONTAINED IN THIS AREA. MAGNETIC SHIELDING IS REQUIRED. REFER TO IEC 60601-2-33 (FDIS SCRIPT COR. HD), CLAUSE 6.8.3. & 5 A2

NOTE: REMOTELY LOCATED. PLACE NEAR THE BUILDING ELECTRICAL SERVICE ENTRANCE.

NOTE: NOT USED IN THIS LAYOUT.

REMOTELY LOCATED

NOTE: FIELD VERIFY LOCATION OF ABOVE ITEM. COORDINATE W/TOSHIBA REPRESENTATIVE.

NOTE: CUSTOMER TO PROVIDE CLEAR ACCESS FOR SERVICING.

RF / MAGNETIC SHIELDING

1. CUSTOMER/CONTRACTOR RESPONSIBLE FOR OBTAINING A SHIELDING VENDOR, TO MODEL, DESIGN, AND BUILD REQUIRED MAGNETIC AND RF SHIELDING.
2. GAUSS LINES IN THESE DRAWINGS ARE REPRESENTED WITHOUT MAGNETIC SHIELDING.
3. RF SHIELDING WEIGHT WILL VARY FROM SITE TO SITE. CUSTOMER'S STRUCTURAL ENGINEER MUST CONSULT WITH RF ENCLOSURE VENDOR FOR RF SHIELDING WEIGHTS.
4. THE EXISTING/FUTURE STEEL INFORMATION WITH RELATIONSHIP TO MAGNET MUST BE PROVIDED TO SITE PLANNING FOR REVIEW (ALL SIDES OF THE ROOM, INCLUDING CEILING AND FLOOR).
5. ANY STEEL BENEATH THE MAGNET MUST BE LOCATED A MINIMUM OF 4'-7" FROM MAGNET ISOCENTER. SOME STEEL REBAR COULD BE ACCEPTABLE, CONSULT WITH TOSHIBA INSTALLATION COORDINATOR FOR APPROVAL OF ANY STEEL IN THIS CRITICAL AREA.
6. MAGNETOMETER SURVEY MUST BE PERFORMED BY TOSHIBA BEFORE SUBMITTING FINAL DRAWINGS (120V POWER SOURCE IS REQUIRED FOR TOSHIBA TO BEGIN SURVEY. A MINIMUM OF 50° F IS REQUIRED FOR SURVEYED AREA).

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EQUIPMENT LEGEND

ROOM TYPE:
P = PROCEDURE ROOM
C = CONTROL ROOM
E = EQUIP./COMPUTER ROOM
R = REMOTELY LOCATED
O = OTHER

ITEM	ELEC. SYM.	ITEM DESCRIPTION SUPPLIED / INSTALLED BY TOSHIBA	RM	BTU / HR.	WEIGHT	REF.
1	MAG	MRT-1504/S3 SUPER CONDUCTING 1.5 TESLA MAGNET	P	4,094.57	11,904.96	1/A3
2	PCH	PATIENT COUCH	P	0.00	617.29	7/A3
3	CON	WIDESCREEN LCD, CONTROL PAD, AND CONTROL BOX	C	682.43	31.53	7/A3
4	HOSC	HOST CABINET	C	1,706.07	55.12	6/A3
5	WLC	WALL CABINET	P	341.21	132.27	8/A3
6	RFC	RF CABINET	E	2,050.00	661.39	3/A3
7	RFAC	RF AMP CABINET	E	10,246.00	661.39	4/A3
8	GACC	GRADIENT POWER SUPPLY AND CONTROL CABINET (TITAN)	E	20,472.85	2,094.39	2/A3
9	RFG	REFRIGERATOR CABINET (BELOW INDOOR CHILLER UNIT)	E	11,260.07	198.42	4/A4
10	TFR	TRANSFORMER CABINET	E	2,729.71	573.20	5/A3
11	CAM	PATIENT OBSERVATION SYSTEM CAMERA (NOT SHOWN)	P	0.00	4.41	—/A3
12	SUVS	SUPERVISORY UNIT SWITCH	P	0.00	0.88	10/A3
13	SUVU	SUPERVISORY UNIT (MOUNTED ON "TFR")	E	0.00	26.46	11/A3
14	OXMS	OXYGEN MONITOR SENSOR	P	0.00	0.44	13/A3
15	OXMM	OXYGEN MONITOR SYSTEM MONITOR	C	0.00	0.44	12/A3
16	FLS	FLOW SWITCH	E	0.00	11.02	—/—
17	INV	INNERVISION (17" MONITOR, KEYBOARD AND PC) ON CART SUPPLIED BY CUSTOMER/CONTRACTOR	E	732.00	49.50	9/A3
18	FSB	FAN SWITCH BOX	C	100.00	2.20	—/—
19	ECGB	ECG GATING – BASE BAND UNIT	E	--.--	2.65	—/—
20	SPK1	CONTROL ROOM SPEAKER (NOT SHOWN)	C	--.--	--.--	—/—
21	SPK2	SCAN ROOM SPEAKER (NOT SHOWN)	P	--.--	--.--	—/—
22	FAN	WB COIL COOLING FAN BOX, MOUNTED TO SIDE OF "LFB2" (NOT SHOWN)	E	341.52	6.61	—/—
		OPTIONAL ITEM DESCRIPTION SUPPLIED / INSTALLED BY TOSHIBA				
23	TBL	FREESTANDING TABLE FOR MONITOR AND KEYBOARD	O	0.00	--.--	6/A3
24	CHR	SWIVEL CHAIR (2 SHOWN)	C	0.00	N/A	—/—
		OPTIONAL ITEM DESCRIPTION SUPPLIED BY TOSHIBA / INSTALLED BY CUSTOMER / CONTRACTOR				
25	LFB1	LINE FILTER BOX (SCAN ROOM SIDE)	P	0.00	132.28	7/A4
26	LFB2	LINE FILTER BOX (EQUIPMENT ROOM SIDE)	E	0.00	220.46	7/A4
27	VRDU	VOLTAGE REGULATING DISTRIBUTION UNIT	E	20,800.00	2,200.00	6/A3
28	TRNS	STEP-UP TRANSFORMER	R	2,500.00	1,000.00	8/A4
29	IHE	DRAKE INDOOR HEAT EXCHANGER (EXACT HEIGHT TO BE DETERMINED)	E	1,500.00	130.00	2/A4
30	OCU	DRAKE OUTDOOR CHILLER UNIT	R	12,800.00	1,900.00	1/A4
31	RMP	DRAKE REMOTE MONITORING PANEL	C	--.--	--.--	3/A4
32	MFOLD	MANIFOLD AREA (FIELD VERIFY LOCATION)	E	00.00	80.00	6/A4
		ITEM DESCRIPTION SUPPLIED / INSTALLED BY CUSTOMER / CONTRACTOR				
33	RFW	RF SHIELDED WINDOW – SITE SPECIFIC PER ROOM CONDITIONS	P	--.--	--.--	—/—
34	RFD	RF SHIELDED DOOR – SITE SPECIFIC PER ROOM CONDITIONS	P	--.--	--.--	—/—
35	RFS	RF SHIELDED ENCLOSURE – SITE SPECIFIC PER ROOM CONDITIONS (THICKNESS VARIES PER MANUFACTURER)	P	--.--	--.--	—/—
36	HVAC	AIR CONDITIONING UNIT – VERIFY LOCATION (NOT SHOWN)	O	--.--	--.--	—/—
37	PAD	CONCRETE PAD FOR OUTDOOR CHILLER UNIT (NOT SHOWN) MINIMUM SIZE 3'-8" X 7'-11"	R	--.--	--.--	—/—
38	WALL	PARENT WALL	P	--.--	--.--	—/—
39	CB	CIRCUIT BREAKER (NOT SHOWN)	E	--.--	--.--	—/—
40	NFCC	NON-FERROUS COIL CABINET	P	--.--	--.--	—/—
41	CF	RAISED COMPUTER FLOOR	E	--.--	--.--	—/—

SYSTEM ELECTRICAL REQUIREMENTS FOR VANTAGE/TITAN MRI SYSTEM

SUPPLY CONFIGURATION:	3 PHASE DELTA OR WYE CONNECTED, 140kVA SERVICE
SUPPLY VOLTAGE:	208V – 600 AMP
VOLTAGE VARIATION:	±10%

REVISED: 01-07-08

SITE PLAN APPROVAL

PLEASE REVIEW, SIGN AND RETURN THIS SET TO HEAD-QUARTERS BEFORE FINAL PLANS. IF THERE ARE ANY CHANGES, PLEASE INDICATE ACCORDINGLY ON THIS SET.

CUSTOMER:	DATE:
SALES:	DATE:
I.P.M.:	DATE:

*** HVAC REQUIREMENTS**

CUSTOMER TO PROVIDE THE NECESSARY HVAC REQUIREMENTS FOR THE TOSHIBA EQUIPMENT TO OPERATE PROPERLY.

AMBIENT TEMPERATURE SHOULD BE IN ACCORDANCE WITH THE FOLLOWING FOR CORRECT EQUIPMENT OPERATION AND PATIENT/OPERATOR COMFORT.

EQUIPMENT ROOM	TEMPERATURE: 68.0° – 75.2° F, HUMIDITY: 40–70%
SCAN ROOM	TEMPERATURE: 60.8° – 75.2° F, HUMIDITY: 40–60%
CONTROL ROOM	TEMPERATURE: 60.8° – 86.0° F, HUMIDITY: 40–75%

NOTE:
A MINIMUM OF 10 AIR CHANGES PER HOUR IS SUGGESTED CONSULT LOCAL CODE.

AIR SUPPLY DUCTS SHOULD NOT BE PLACED DIRECTLY OVER EXAMINATION TABLES FOR PATIENT COMFORT.

EQUIPMENT IN ENCLOSED SPACES SUCH AS EQUIPMENT ROOMS, TRANSFORMER CLOSETS AND COMPUTER ROOMS MUST BE PROVIDED WITH ADEQUATE VENTILATION. THE AIR FLOW THROUGH TOSHIBA EQUIPMENT CABINETS IS FROM BOTTOM TO TOP. WHERE POSSIBLE A/C SUPPLY OUTLETS SHOULD BE LOCATED AT FLOOR LEVEL WITH RETURN GRILLES IN THE CEILING.

DEDICATED AIR CONDITIONER REQUIRED FOR SCAN & EQUIPMENT ROOM. REVISED: 12-08-05

CEILING HEIGHT

RECOMMENDED CEILING HEIGHT: 9'-6 1/4"
MINIMUM CEILING HEIGHT: 9'-2 1/8" REVISED: 12-08-05

VIBRATION SPECIFICATION

0.02 m/s^2 (Peak to Peak) = 2.0 Gal
VIBRATION TESTING IF REQUIRED IS RESPONSIBILITY OF CUSTOMER/CONTRACTOR. REVISED: 12-08-05

NOTE: ALL MATERIAL IN SCAN ROOM MUST BE NON FERROUS. REVISED: 01-09-06

TOSHIBA

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **1/4" = 1'-0"**

DRAWN: **G.S.P.**

QUOTE: N/A

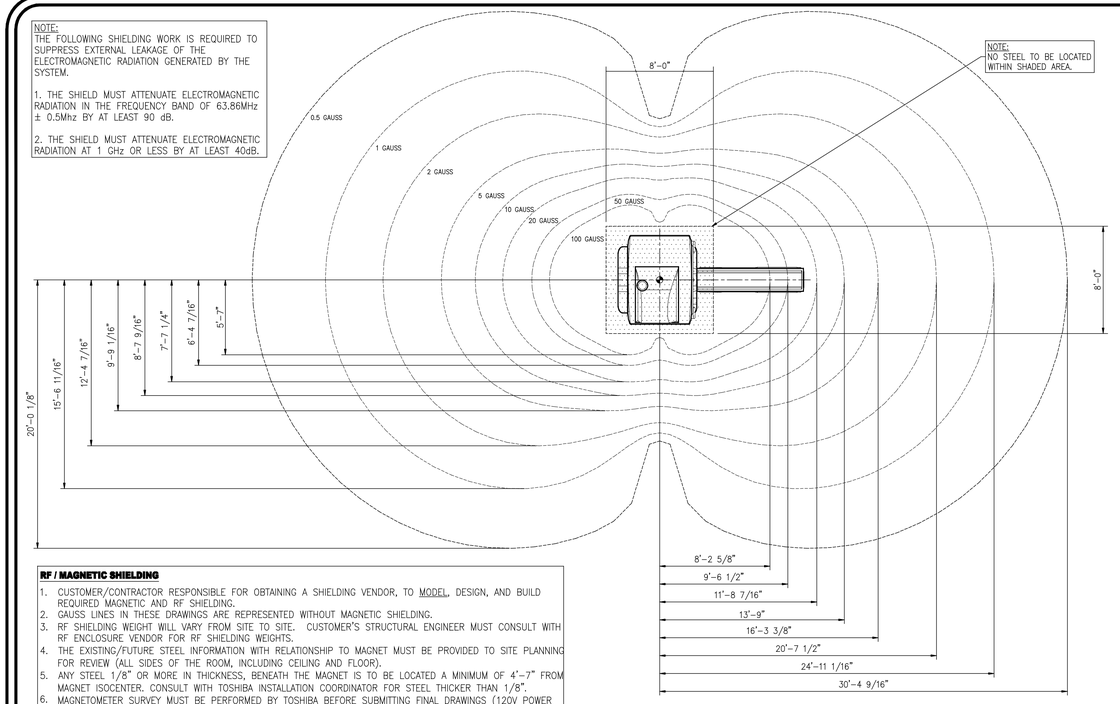
PROJECT NO.
TYPICALS

A1

NOTE:
THE FOLLOWING SHIELDING WORK IS REQUIRED TO SUPPRESS EXTERNAL LEAKAGE OF THE ELECTROMAGNETIC RADIATION GENERATED BY THE SYSTEM.

1. THE SHIELD MUST ATTENUATE ELECTROMAGNETIC RADIATION IN THE FREQUENCY BAND OF 63.86MHz ± 0.5Mhz BY AT LEAST 90 dB.

2. THE SHIELD MUST ATTENUATE ELECTROMAGNETIC RADIATION AT 1 GHz OR LESS BY AT LEAST 40dB.



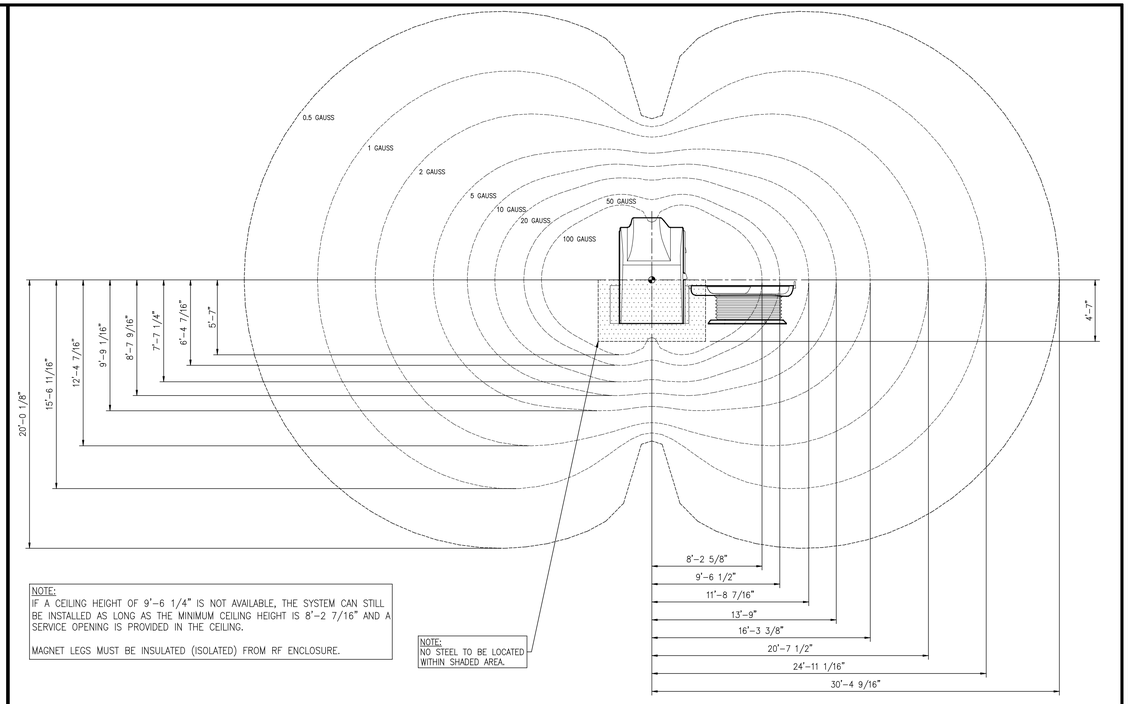
RF / MAGNETIC SHIELDING

1. CUSTOMER/CONTRACTOR RESPONSIBLE FOR OBTAINING A SHIELDING VENDOR, TO MODEL, DESIGN, AND BUILD REQUIRED MAGNETIC AND RF SHIELDING.
2. GAUSS LINES IN THESE DRAWINGS ARE REPRESENTED WITHOUT MAGNETIC SHIELDING.
3. RF SHIELDING WEIGHT WILL VARY FROM SITE TO SITE. CUSTOMER'S STRUCTURAL ENGINEER MUST CONSULT WITH RF ENCLOSURE VENDOR FOR RF SHIELDING WEIGHTS.
4. THE EXISTING/FUTURE STEEL INFORMATION WITH RELATIONSHIP TO MAGNET MUST BE PROVIDED TO SITE PLANNING FOR REVIEW (ALL SIDES OF THE ROOM, INCLUDING CEILING AND FLOOR).
5. ANY STEEL 1/8" OR MORE IN THICKNESS, BENEATH THE MAGNET IS TO BE LOCATED A MINIMUM OF 4'-7" FROM MAGNET ISOCENTER. CONSULT WITH TOSHIBA INSTALLATION COORDINATOR FOR STEEL THICKER THAN 1/8".
6. MAGNETOMETER SURVEY MUST BE PERFORMED BY TOSHIBA BEFORE SUBMITTING FINAL DRAWINGS (120V POWER IS REQUIRED FOR TOSHIBA TO BEGIN SURVEY. A MINIMUM OF 50° F IS REQUIRED FOR SURVEY AREA).

REVISED: 12-08-05

1 FRINGE FIELD MEASUREMENTS (PLAN VIEW)

SCALE: 3/8" = 1'-0"



NOTE:
IF A CEILING HEIGHT OF 9'-6 1/4" IS NOT AVAILABLE, THE SYSTEM CAN STILL BE INSTALLED AS LONG AS THE MINIMUM CEILING HEIGHT IS 8'-2 7/16" AND A SERVICE OPENING IS PROVIDED IN THE CEILING.

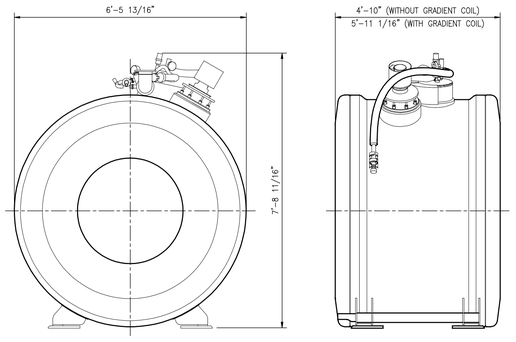
MAGNET LEGS MUST BE INSULATED (ISOLATED) FROM RF ENCLOSURE.

NOTE:
NO STEEL TO BE LOCATED WITHIN SHADED AREA.

REVISED: 12-08-05

2 FRINGE FIELD MEASUREMENTS (SIDE VIEW)

SCALE: 3/8" = 1'-0"



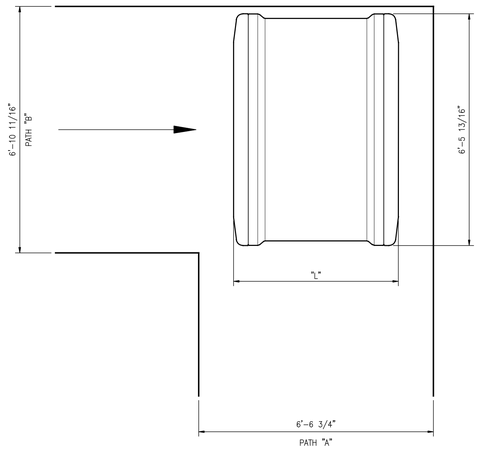
NOTE:
FOR DELIVERY: CONSULT RIGGING CONTRACTOR FOR HEIGHT REQUIREMENTS FOR MATERIALS USED TO TRANSPORT MAGNET TO FINAL LOCATION.

* CASTER HEIGHTS WILL VARY.
* CARRYING IN WEIGHT WITHOUT GRADIENT COIL, COVER IS 8800 POUNDS (FILLED).

REVISED: 05-01-06

3 MAGNET ASSEMBLY FOR CARRYING IN

SCALE: 1/2" = 1'-0"



"L" = 5'-10 5/8", PATH = 6'-10 11/16" (ASSEMBLED GANTRY)
"L" = 4'-9 3/4", PATH = 6'-6 3/4" (MAGNET ONLY)

NOTE:
IF ORIENTATION IS NOT CHANGED AT THE CORNER, 6'-6 3/4" WIDTH IS SUFFICIENT FOR PATH "A" AND 6'-10 11/16" FOR PATH "B".

REVISED: 12-08-05

4 MINIMUM CORRIDOR WIDTH FOR EQUIPMENT INGRESS

SCALE: 1/2" = 1'-0"

UNIT	EXAMPLES	mTesla (Gauss)	ft
ACCELERATING TUBE	LINEAR ACCELERATORS	0.05 (0.5)	27.9
I.I.	CT (DETECTOR, DATA ACQUISITION), X-RAYS SYS.	0.05 (0.5)	27.9
NON-SHIELDED PHOTO-MULTIPLIER TUBE	CT, GAMMA CAMERA, PET SYSTEMS	0.05 (0.5)	27.9
REED RELAY	PACEMAKERS	0.5 (5)	15.8
X-RAY TUBE	CT, X-RAY SYSTEMS	1 (10)	13.1
CRT	MONOCHROME MONITORS (SHIELDED)	0.5 (5)	15.8
	MONOCHROME MONITORS (UNSHIELDED)	0.2 (2)	19.7
	COLOR MONITORS (SHIELDED)	.1 (1)	23.0
	COLOR MONITORS (UNSHIELDED)	0.05 (0.5)	27.9
	MULTIFORMAT CAMERAS	1 (10)	13.1
	ULTRASONIC DIAGNOSTIC SYSTEMS	0.2 (2)	19.7
	ELECTROCARDIOGRAPHS	0.2 (2)	19.7
	ELECTROENCEPHALOGRAPHS	0.2 (2)	19.7
OXYGEN MONITOR	INCLUDED IN THE MRI SYSTEM CONFIGURATION	2 (20)	11.5
EMERGENCY MAGNET RUN DOWN UNIT	INCLUDED IN THE MRI SYSTEM CONFIGURATION	2 (20)	11.5
WALL CABINET	UNITS MAKING UP THE EMRI SYSTEM	10 (100)	8.5
FILTER BOX	UNITS MAKING UP THE EMRI SYSTEM	10 (100)	8.5
RF CABINET	UNITS MAKING UP THE EMRI SYSTEM	0.5 (5)	15.8
GRADIENT POWER SUPPLY	UNITS MAKING UP THE EMRI SYSTEM	0.5 (5)	15.8
TRANSFORMER CABINET	UNITS MAKING UP THE EMRI SYSTEM	0.5 (5)	15.8
CONTROLLER	UNITS MAKING UP THE EMRI SYSTEM	0.5 (5)	15.8
VACUUM PUMP UNIT	UNITS MAKING UP THE EMRI SYSTEM	0.5 (5)	15.8
MAGNETIC RECORDING MEDIA	MAGNETIC TAPES, FLOPPY DISKS	1 (10)	13.1
MAGNETIC RECORDING MEDIA	BANK, CREDIT CARDS	2 (20)	11.5
OTHERS	WATCHES	3 (30)	10.5
	ELECTRON MICROSCOPES	0.0001	-.-

REVISED: 01-04-07

5 EFFECTS OF THE MAGNETIC FIELD

SCALE: NOT TO SCALE

NOTE:
ALL INFORMATION REGARDING THE INFORMATION ON THIS SHEET IS TO BE CONSIDERED PRELIMINARY AND TENTATIVE AND IS SUBJECT TO CHANGE OR REVISION WITHOUT PRIOR NOTICE.

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **AS NOTED**

DRAWN: **G.S.P.**

QUOTE: N/A

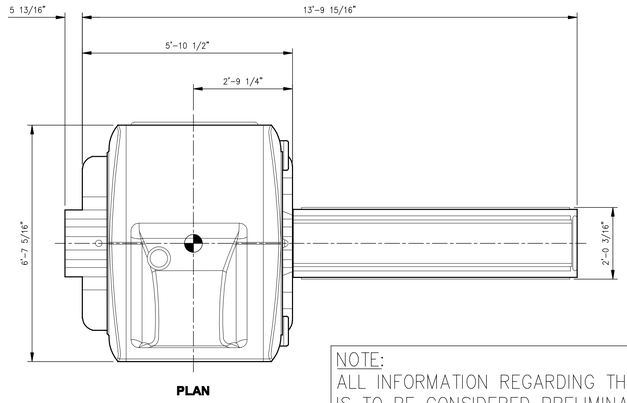
PROJECT NO.
TYPICALS

A2

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

MAG	
HEAT OUTPUT (BTU'S)	4,094.57
WEIGHT (LBS)	11,904.96

PCH	
HEAT OUTPUT (BTU'S)	N/A
WEIGHT (LBS)	617.29



NOTE:
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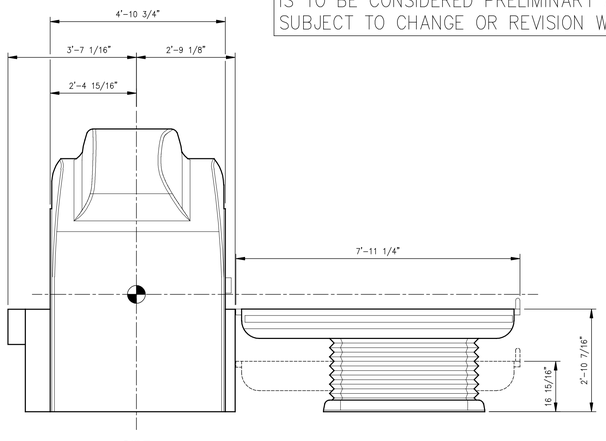
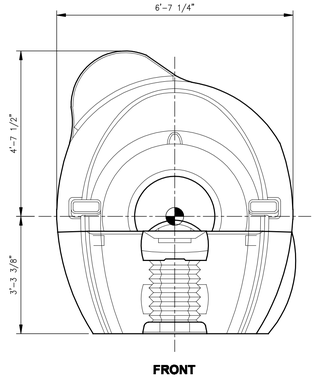


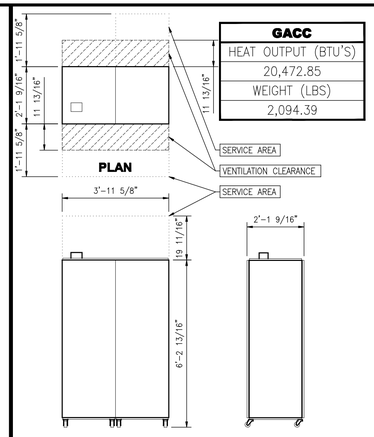


REV: 12-20-07

1 VANTAGE TITAN 1.5 TESLA MAGNET AND COUCH

SCALE: 1/2" = 1'-0"

GACC	
HEAT OUTPUT (BTU'S)	20,472.85
WEIGHT (LBS)	2,094.39

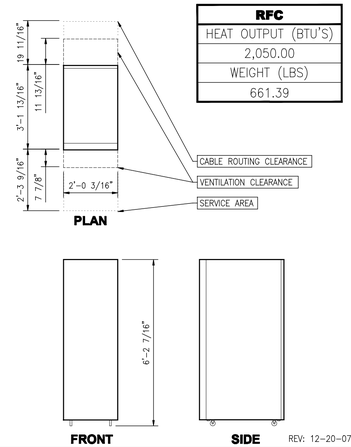


REV: 12-20-07

2 TITAN GRADIENT & CONTROL CABINET

SCALE: 3/8" = 1'-0"

RFC	
HEAT OUTPUT (BTU'S)	2,050.00
WEIGHT (LBS)	661.39

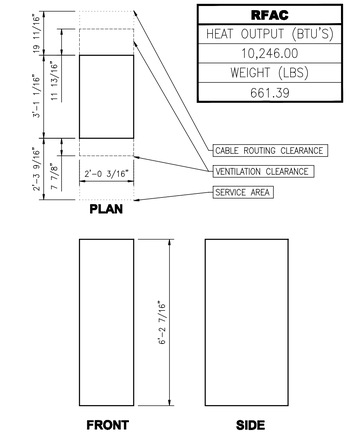


REV: 12-20-07

3 TITAN RF CABINET

SCALE: 3/8" = 1'-0"

RFAC	
HEAT OUTPUT (BTU'S)	10,246.00
WEIGHT (LBS)	661.39

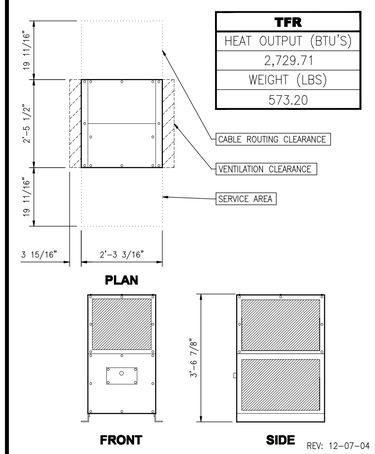


REV: 01-04-08

4 TITAN RF AMP CABINET

SCALE: 3/8" = 1'-0"

TFR	
HEAT OUTPUT (BTU'S)	2,729.71
WEIGHT (LBS)	573.20

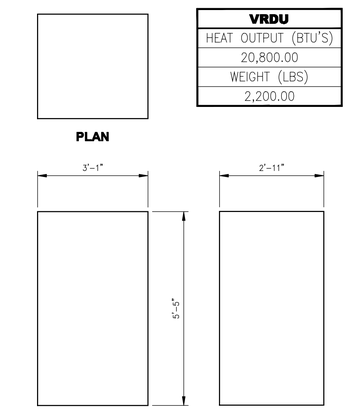


REV: 12-07-04

5 TRANSFORMER CABINET

SCALE: 1/2" = 1'-0"

VRDU	
HEAT OUTPUT (BTU'S)	20,800.00
WEIGHT (LBS)	2,200.00



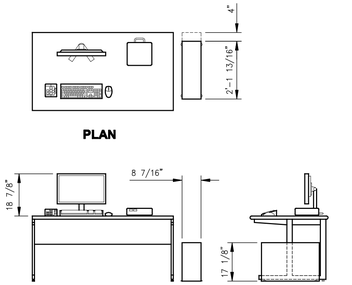
REVISED: 01-04-08

6 VOLTAGE REGULATING DISTRIBUTION UNIT

SCALE: 1/2" = 1'-0"

TABLE IS OPTIONAL ITEM

CON/HOSC	
HEAT OUTPUT (BTU'S)	2,388.49
WEIGHT (LBS)	86.65

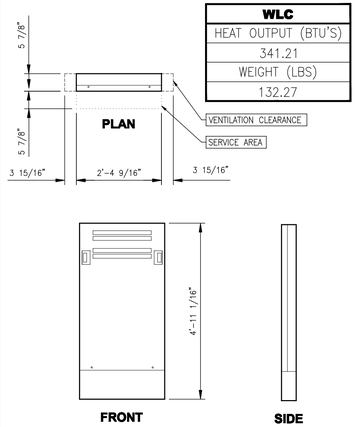


REV: 10-11-07

7 18" LCD, CONTROL PAD, & CONTROL BOX

SCALE: 3/8" = 1'-0"

WLC	
HEAT OUTPUT (BTU'S)	341.21
WEIGHT (LBS)	132.27

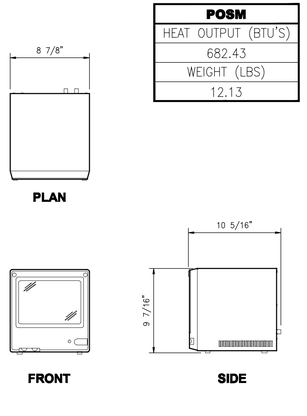


REV: 12-06-06

8 TITAN WALL CABINET

SCALE: 1/2" = 1'-0"

POSM	
HEAT OUTPUT (BTU'S)	682.43
WEIGHT (LBS)	12.13

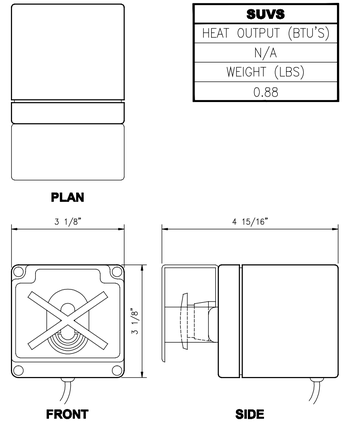


REV: 12-07-04

9 PATIENT OBSERVATION SYSTEM MONITOR

SCALE: 1/2" = 1'-0"

SUVS	
HEAT OUTPUT (BTU'S)	N/A
WEIGHT (LBS)	0.88

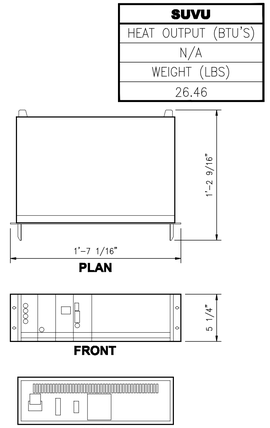


REV: 12-07-04

10 SUPERVISORY UNIT SWITCH

SCALE: 6" = 1'-0"

SUVU	
HEAT OUTPUT (BTU'S)	N/A
WEIGHT (LBS)	26.46

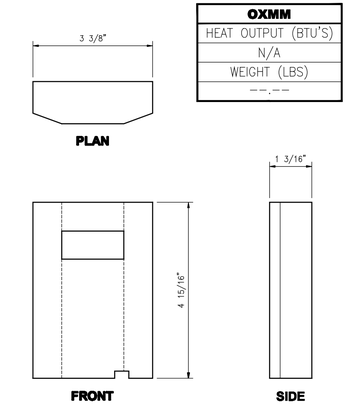


REV: 12-07-04

11 SUPERVISORY UNIT

SCALE: 1 1/2" = 1'-0"

OXMM	
HEAT OUTPUT (BTU'S)	N/A
WEIGHT (LBS)	--.--

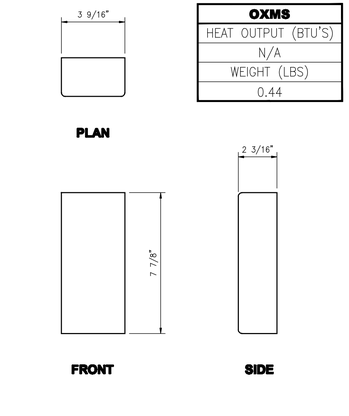


REV: 12-07-04

12 OXYGEN MONITOR DISPLAY MONITOR

SCALE: 6" = 1'-0"

OXMS	
HEAT OUTPUT (BTU'S)	N/A
WEIGHT (LBS)	0.44



REV: 12-07-04

13 OXYGEN MONITOR SENSOR

SCALE: 3" = 1'-0"

TOSHIBA

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REV.	DATE	DESCRIPTION
INT.		

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **AS NOTED**

DRAWN: **G.S.P.**

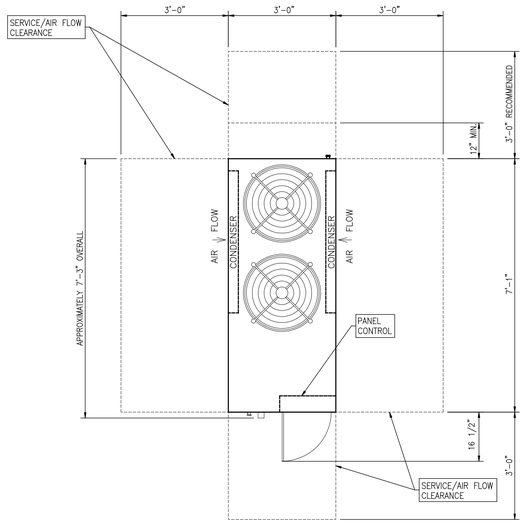
QUOTE: N/A

PROJECT NO.
TYPICALS

A3

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

OCU
HEAT OUTPUT (BTU'S)
12,800.00
WEIGHT (LBS)
1,900.00

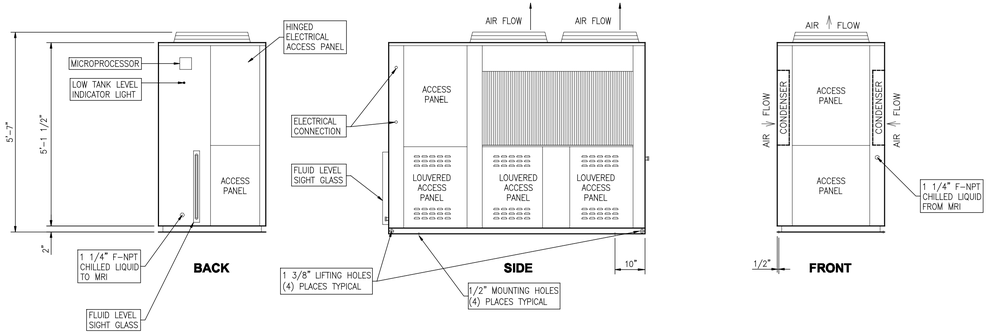


PLAN

NOTE:
ALL INFORMATION REGARDING THE INFORMATION ON THIS SHEET IS TO BE CONSIDERED PRELIMINARY AND TENTATIVE AND IS SUBJECT TO CHANGE OR REVISION WITHOUT PRIOR NOTICE.

NOTE:
IF LOCAL CODE REQUIRES A DISCONNECT AT THE UNIT, IT IS CUSTOMER/CONTRACTOR'S RESPONSIBILITY TO SUPPLY AND INSTALL IT.

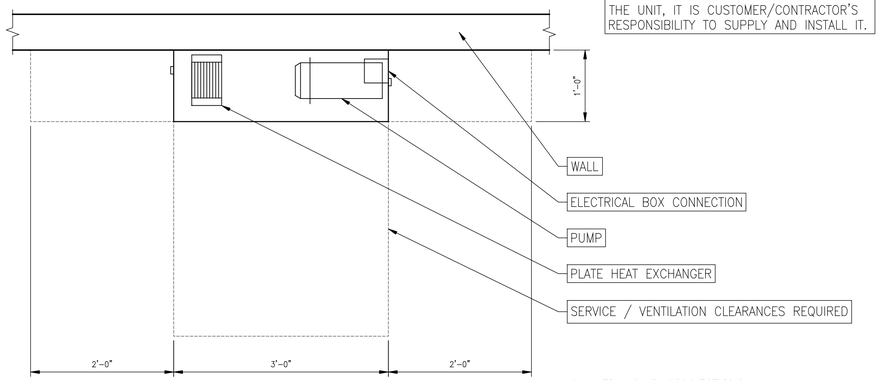
NOTE:
3 FEET SERVICE/AIR FLOW CLEARANCE ON ALL SIDES OF THIS UNIT. AIR FLOW MUST NOT BE RESTRICTED ON TOP OF UNIT.



REV: 12-19-07

IHE
HEAT OUTPUT (BTU'S)
1,500.00
WEIGHT (LBS)
130.00

NOTE:
IF LOCAL CODE REQUIRES A DISCONNECT AT THE UNIT, IT IS CUSTOMER/CONTRACTOR'S RESPONSIBILITY TO SUPPLY AND INSTALL IT.

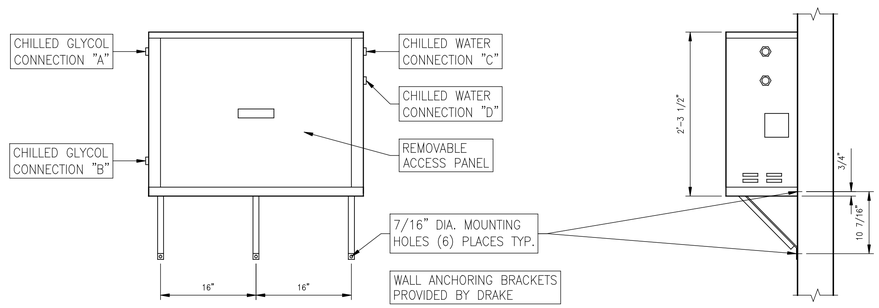


PLAN (WITH TOP REMOVED)

CHILLED LIQUID CONNECTIONS

PKG USED WITH CHILLER MODEL				
	A	B	C	D
T.B.D.	GLYCOL TO CHILLER	GLYCOL FROM CHILLER	WATER FROM MRI	WATER TO MRI

IDEAL HEIGHT OF THE CHILLER IS APPROXIMATELY 5'-0" A.F.F.

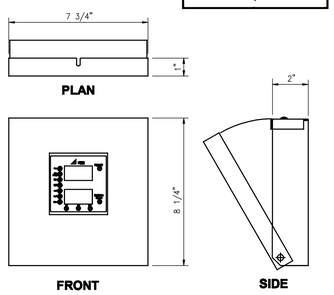


REV: 12-19-07

1 DRAKE OUTDOOR CHILLER UNIT (MODEL # T.B.D.)

SCALE: 1/2" = 1'-0"

RMP
HEAT OUTPUT (BTU'S)
--.--
WEIGHT (LBS)
--.--

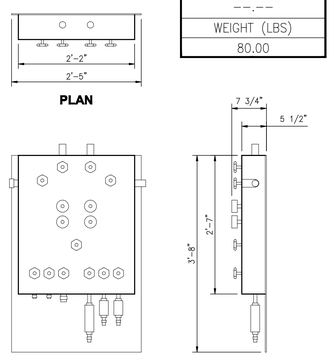


REV: 11-04-05

2 DRAKE INDOOR HEAT EXCHANGER (MODEL # T.B.D.)

SCALE: 1" = 1'-0"

MANIFOLD
HEAT OUTPUT (BTU'S)
--.--
WEIGHT (LBS)
80.00

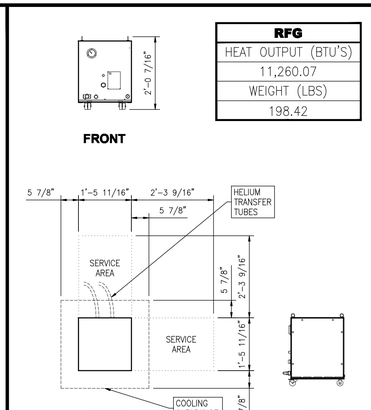


REV: 12-07-04

3 DRAKE CHILLER REMOTE PANEL

SCALE: 3" = 1'-0"

RFG
HEAT OUTPUT (BTU'S)
11,260.07
WEIGHT (LBS)
198.42



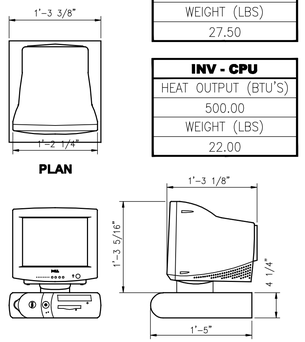
REV: 12-07-04

4 REFRIGERATOR CABINET

SCALE: 1/2" = 1'-0"

INV - MONITOR
HEAT OUTPUT (BTU'S)
232.00
WEIGHT (LBS)
27.50

INV - CPU
HEAT OUTPUT (BTU'S)
500.00
WEIGHT (LBS)
22.00

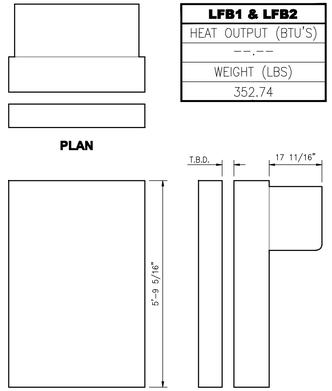


REVISED: 12-20-07

5 INNERVISION WORKSTATION

SCALE: 1" = 1'-0"

LFB1 & LFB2
HEAT OUTPUT (BTU'S)
--.--
WEIGHT (LBS)
352.74



REV: 12-19-07

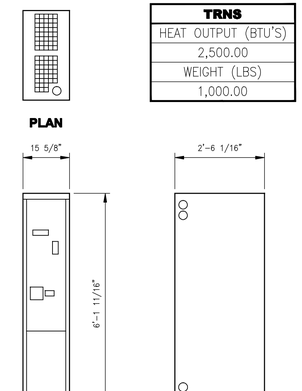
6 MANIFOLD

SCALE: 3/4" = 1'-0"

7 VANTAGE TITAN LINE FILTER PANEL

SCALE: 1/2 = 1'-0"

TRNS
HEAT OUTPUT (BTU'S)
2,500.00
WEIGHT (LBS)
1,000.00



REV: 01-07-08

8 VANTAGE TITAN TRANSFORMER

SCALE: 1/2 = 1'-0"

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REV.	DATE	DESCRIPTION

INT.

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **AS NOTED**

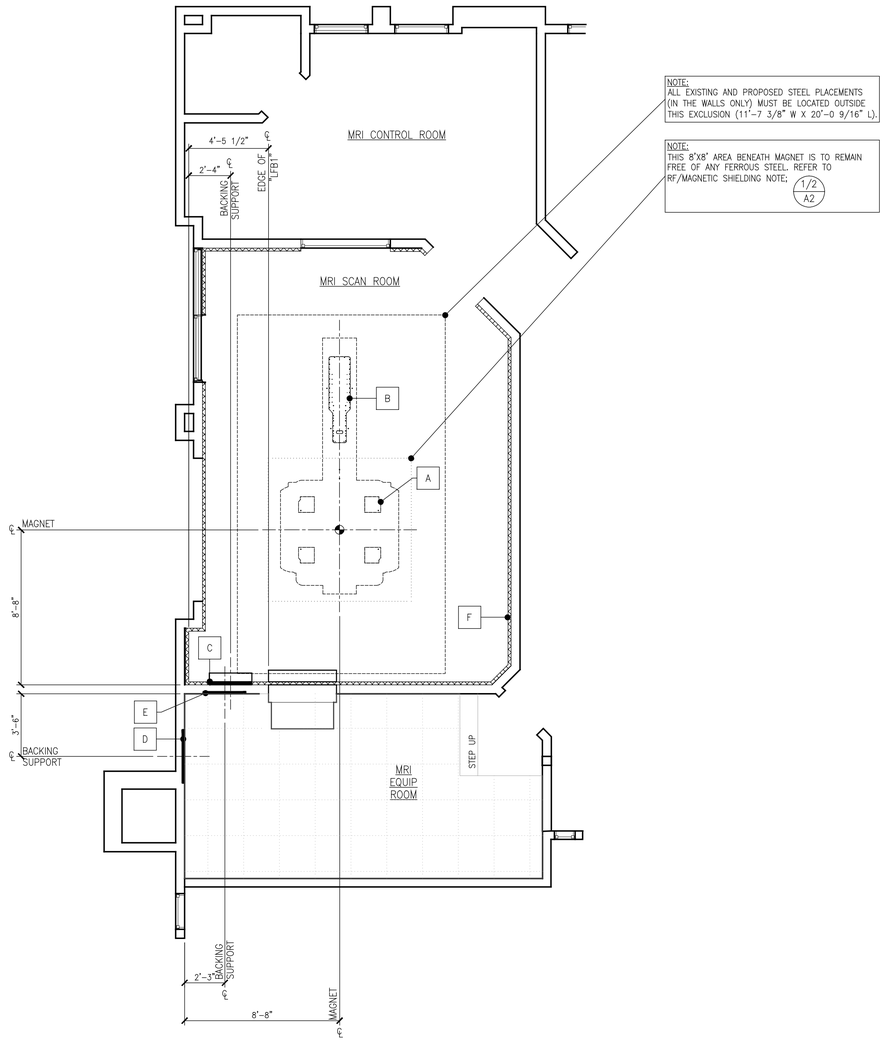
DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

A4

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.



STRUCTURAL LAYOUT

NOTE:
THE EXISTING/FUTURE STEEL INFORMATION WITH RELATIONSHIP TO MAGNET MUST BE PROVIDED TO SITE PLANNING FOR REVIEW (ALL SIDES OF THE ROOM, INCLUDING CEILING AND FLOOR).

NOTE:
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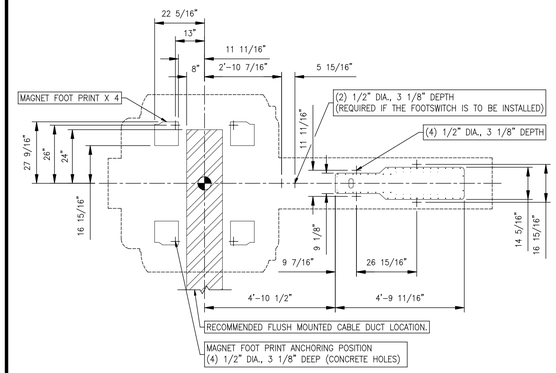
Made for Life

STRUCTURAL LEGEND

ITEM	ITEM DESCRIPTION SUPPLIED / INSTALLED BY TOSHIBA	REF.
A	SUPPORT BASE FOR MAGNET	1/S1
B	MAGNET COUCH BASE	1/S1

ITEM	ITEM DESCRIPTION SUPPLIED / INSTALLED BY CUSTOMER / CONTRACTOR	REF.
C	BACKING SUPPORT FOR WALL CABINET (SEE * NOTE BELOW)	5/M5
D	BACKING SUPPORT (3'-0" W X 4'-6" H) FOR INDOOR HEAT EXCHANGER (HEIGHT T.B.D.)	2/A3
E	BACKING SUPPORT FOR MANIFOLD	---/---
F	RF ENCLOSURE	---/---



NOTE:
1. IN CASE OF FIRE, THE FINISH MATERIAL OF THE FLOOR MUST BE NONFLAMMABLE AND HIGHLY FIRE RESISTANT, IN ORDER TO PREVENT THE FROM SPREADING.
2. FLOOR IN THIS AREA TO BE LEVEL WITHIN 1/16" OVER ENTIRE AREA.
3. THE FLOOR MUST SUPPORT 11,904.96 lbs. FOR THE MAGNET, INCLUDING THE COVERS AND THE GRADIENT COIL. THE COMPLETE FLOOR MUST WITHSTAND A MAXIMUM CONCENTRATED MAGNET LOAD OF 3,796.04 lbs. PER SQUARE FOOT (2,976.24 lbs. PER MAGNET FOOT). THE FLOOR MUST BE ABLE TO WITHSTAND BOTH THE MAGNET AND THE WEIGHT OF THE MAGNETIC SHIELDING.
4. IT IS RF VENDOR'S RESPONSIBILITY TO PROVIDING BOLTS AND ANCHORING THE MAGNET.
5. IT IS CUSTOMER/CONTRACTOR'S RESPONSIBILITY TO MEET SEISMIC REQUIREMENTS (IF NECESSARY).

REVISED: 09-24-07

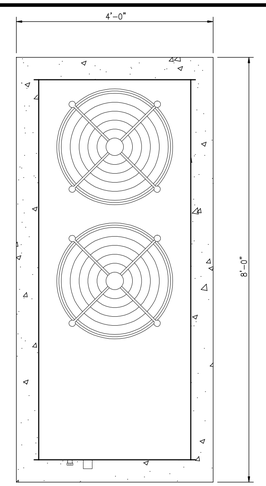
1 VANTAGE / ATLAS MAGNET FOOTPRINT & COUCH LAYOUT

SCALE: 3/8" = 1'-0"

NOTE:
ALL MATERIAL IN SCAN ROOM MUST BE NON FERROUS.

CONTRACTOR TO PROVIDE 5/8" PLYWOOD OR NON FERROUS MATERIAL BACKING PLATE FOR INSTALLING WALL CABINET.

REVISED: 01-09-06



SIZE OF CONCRETE PAD

REVISED: 05-01-06

2 DRAKE OUTDOOR CHILLER UNIT

SCALE: 3/4" = 1'-0"

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www.toshiba.com/tams

REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **1/4" = 1'-0"**

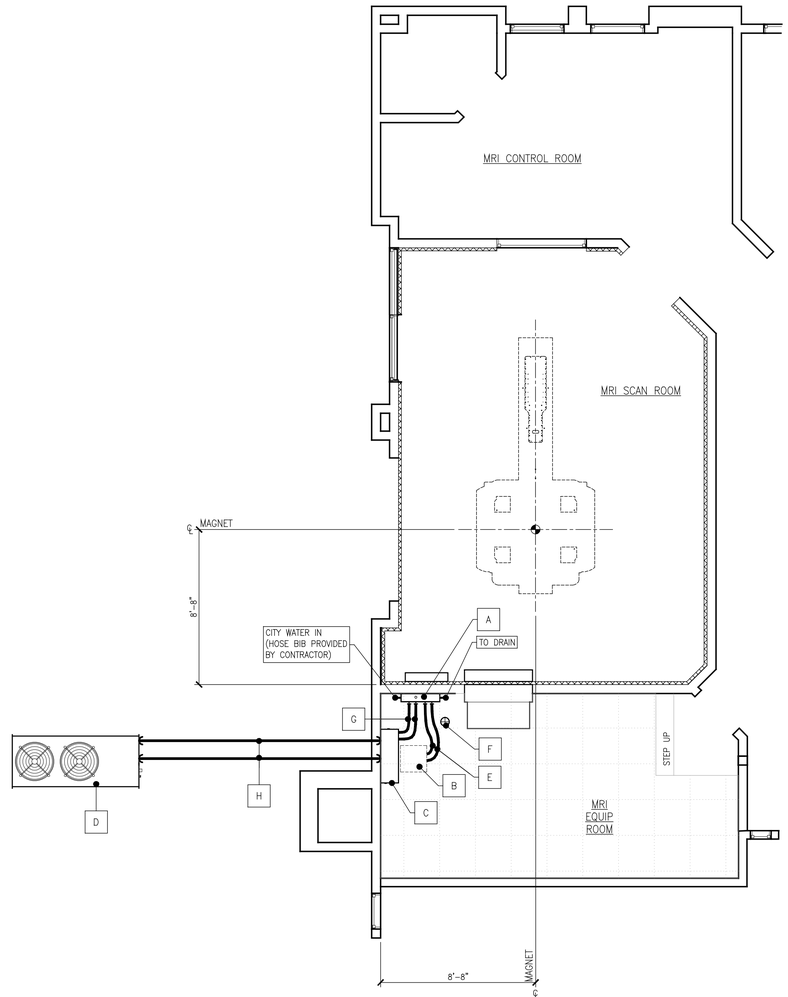
DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

S1

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.



PLUMBING LAYOUT

NOTE:
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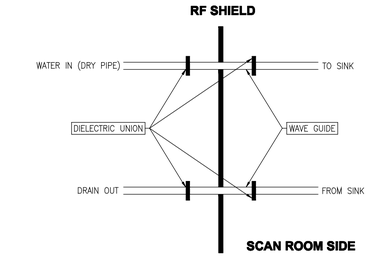
Made for Life

PLUMBING LEGEND

ITEM	ITEM DESCRIPTION SUPPLIED BY TOSHIBA INSTALLED BY CUSTOMER / CONTRACTOR	REF.
A	MANIFOLD	1/P2
B	REFRIGERATOR CABINET	1/P2
C	DRAKE INDOOR HEAT EXCHANGER	1/P2
D	DRAKE OUTDOOR CHILLER UNIT	1/P2
E	(2) 1/2" FLEXIBLE HOSE FROM MANIFOLD TO REFRIGERATION. FIELD VERIFY LOCATION WITH TOSHIBA REPRESENTATIVE.	1/P2

ITEM	ITEM DESCRIPTION SUPPLIED / INSTALLED BY CUSTOMER / CONTRACTOR	REF.
F	DRAIN LOCATED FOR MANIFOLD & REFRIGERATOR. FIELD VERIFY EXACT LOCATION AT TIME OF INSTALLATION. DRAIN CAPACITY TO MEET OR EXCEED DISCHARGE CAPACITY.	1/P2
G	SUPPLY AND VENT RETURN LINE FROM MANIFOLD TO CHILLER BY PLUMBING CONTRACTOR. PROVIDE 1" HIGH PRESSURE COPPER PIPE AFTER UNITS ARE SET IN PLACE.	1/P2
H	SUPPLY AND VENT RETURN HARD PIPE BY PLUMBING CONTRACTOR.	2/P1



NOTE:
A SINK IN THE SCAN ROOM IS NOT RECOMMENDED. IT WILL ONLY BE ACCEPTABLE IF A "DRY FILL" SYSTEM IS USED, AND PLUMBING INTO AND OUT OF THE SCAN ROOM MUST BE VIA WAVE GUIDES WITH DIELECTRIC UNIONS ON BOTH SIDES. THIS WILL PROVIDE BOTH RF FREQUENCY AND ELECTRICAL ISOLATION. PLEASE REFER TO ABOVE DETAILS.

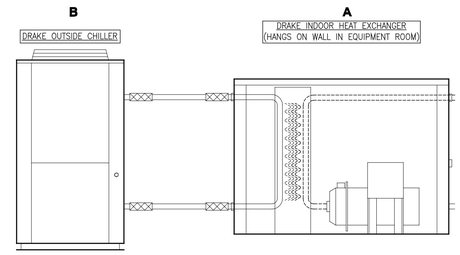
REVISED: 12-08-05

1 SCAN ROOM SINK

NOTE: ALL MATERIAL IN SCAN ROOM MUST BE NON FERROUS.

REVISED: 01-09-06

"DUAL LOOP SYSTEM ONLY"



SIZE	DISTANCE	LINEAL FEET	EQUIVALENT FEET
1"	40'	80'	110'
1 1/4"	110'	220'	275'
1 1/2"	240'	480'	600'
2"	960'	1820'	2400'

DISTANCE = PHYSICAL STRAIGHT LINE POINT A TO POINT B – INDOOR HEAT EXCHANGER "IHE" TO OUTDOOR CHILLER UNIT "OCU" (ONE WAY).

LINEAL FEET = THE MEASURED LENGTH OF STRAIGHT TUBING REQUIRED TO PIPE BETWEEN THE OUTDOOR CHILLER "OCU" & THE INDOOR HEAT EXCHANGER "IHE" IN THE SUPPLY PLUS THE RETURN LINES.

EQUIVALENT FEET = TAKES INTO ACCOUNT THE FRICTIONAL LOSES WITHIN A PIPING SYSTEM CAUSED BY BOTH THE STRAIGHT TUBING AS WELL AS VARIOUS VALVES & FITTINGS USED WITHIN THE SYSTEM.

NOTE: THESE LENGTHS ARE BASED ON USING A 40% SOLUTION OF PROPYLENE GLYCOL & WATER & A FLOW RATE OF 17 GPM. FOR QUESTIONS, PLEASE CONTACT OTTO WEISS @ DRAKE 888) 289-7299.

REVISED: 05-01-06

2 GLYCOL LINE SIZING BIN "IHE" & "OCU"

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REV.	DATE	DESCRIPTION
INT.		

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **1/4" = 1'-0"**

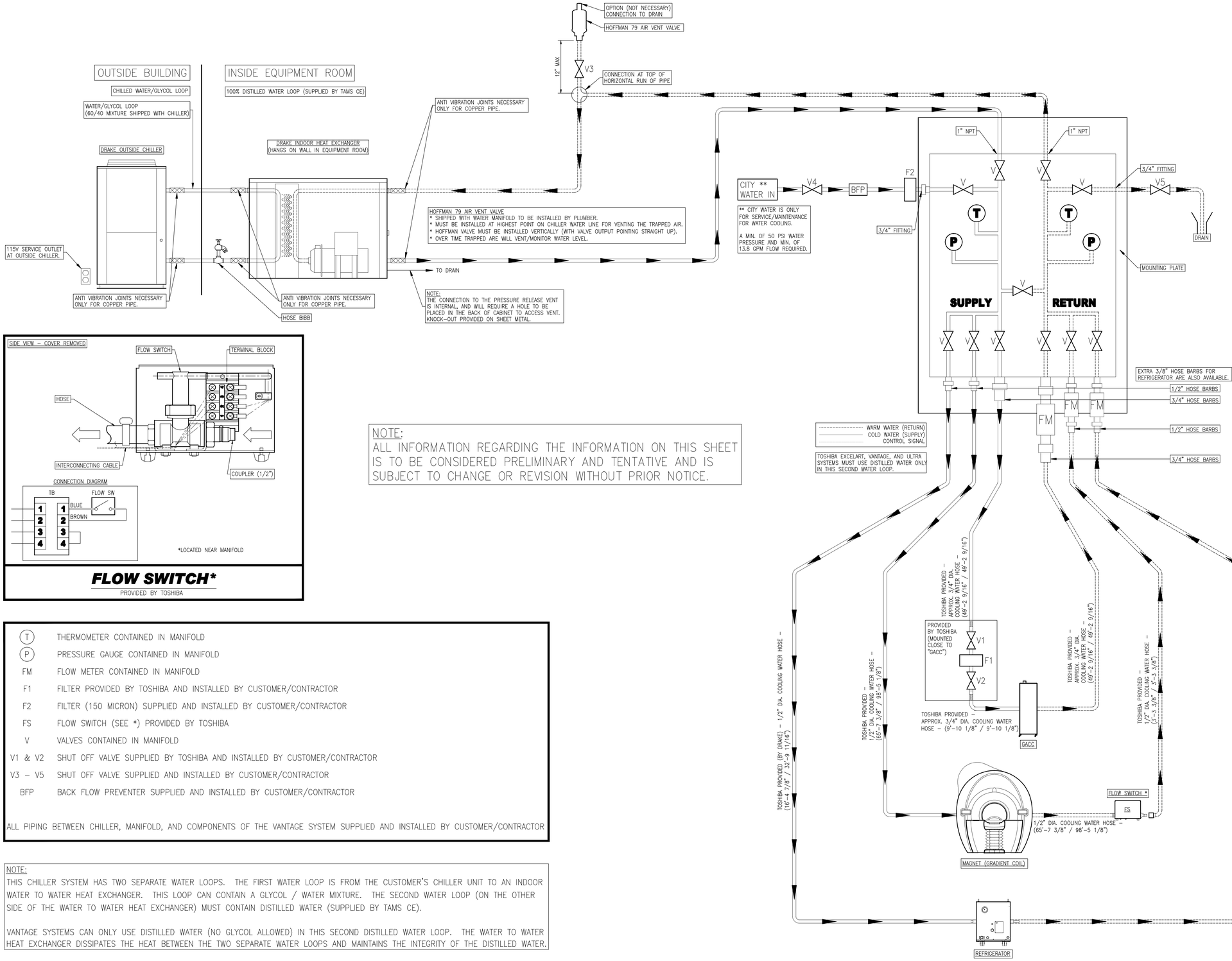
DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

P1

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.


OUTSIDE BUILDING
INSIDE EQUIPMENT ROOM
CHILLED WATER/GLYCOL LOOP
100% DISTILLED WATER LOOP (SUPPLIED BY TAMS CE)
WATER/GLYCOL LOOP
(60/40 MIXTURE SHIPPED WITH CHILLER)
DRAKE OUTSIDE CHILLER
DRAKE INDOOR HEAT EXCHANGER
(HANGS ON WALL IN EQUIPMENT ROOM)
OPTION (NOT NECESSARY)
CONNECTION TO DRAIN
HOFFMAN 79 AIR VENT VALVE
12" MAX
V3
CONNECTION AT TOP OF
HORIZONTAL RUN OF PIPE
ANTI VIBRATION JOINTS NECESSARY
ONLY FOR COPPER PIPE.
HOFFMAN 79 AIR VENT VALVE
* SHIPPED WITH WATER MANIFOLD TO BE INSTALLED BY PLUMBER.
* MUST BE INSTALLED AT HIGHEST POINT ON CHILLER WATER LINE FOR VENTING THE TRAPPED AIR.
* HOFFMAN VALVE MUST BE INSTALLED VERTICALLY (WITH VALVE OUTPUT POINTING STRAIGHT UP).
* OVER TIME TRAPPED ARE WILL VENT/MONITOR WATER LEVEL.
115V SERVICE OUTLET
AT OUTSIDE CHILLER.
ANTI VIBRATION JOINTS NECESSARY
ONLY FOR COPPER PIPE.
ANTI VIBRATION JOINTS NECESSARY
ONLY FOR COPPER PIPE.
HOSE BIBB
TO DRAIN
NOTE:
THE CONNECTION TO THE PRESSURE RELEASE VENT
IS INTERNAL, AND WILL REQUIRE A HOLE TO BE
PLACED IN THE BACK OF CABINET TO ACCESS VENT.
KNOCK-OUT PROVIDED ON SHEET METAL.
CITY **
WATER IN
V4
BFP
F2
** CITY WATER IS ONLY
FOR SERVICE/MAINTENANCE
FOR WATER COOLING.
A MIN. OF 50 PSI WATER
PRESSURE AND MIN. OF
13.8 GPM FLOW REQUIRED.
3/4" FITTING
1" NPT
1" NPT
3/4" FITTING
V5
DRAIN
MOUNTING PLATE
SUPPLY
RETURN
EXTRA 3/8" HOSE BARBS FOR
REFRIGERATOR ARE ALSO AVAILABLE.
1/2" HOSE BARBS
3/4" HOSE BARBS
1/2" HOSE BARBS
3/4" HOSE BARBS
WARM WATER (RETURN)
COLD WATER (SUPPLY)
CONTROL SIGNAL
TOSHIBA EXCELART, VANTAGE, AND ULTRA
SYSTEMS MUST USE DISTILLED WATER ONLY
IN THIS SECOND WATER LOOP.
TOSHIBA PROVIDED (BY DRAKE) - 1/2" DIA. COOLING WATER HOSE - (164'-7 7/8" / 32'-9 41/16")
TOSHIBA PROVIDED - APPROX. 3/4" DIA. COOLING WATER HOSE - (49'-2 9/16" / 49'-2 9/16")
PROVIDED BY TOSHIBA (MOUNTED CLOSE TO "GACC")
V1
F1
V2
TOSHIBA PROVIDED - 1/2" DIA. COOLING WATER HOSE - (65'-7 3/8" / 98'-5 1/8")
TOSHIBA PROVIDED - APPROX. 3/4" DIA. COOLING WATER HOSE - (9'-10 1/8" / 9'-10 1/8")
GACC
TOSHIBA PROVIDED - APPROX. 3/4" DIA. COOLING WATER HOSE - (49'-2 9/16" / 49'-2 9/16")
TOSHIBA PROVIDED - 1/2" DIA. COOLING WATER HOSE - (65'-7 3/8" / 98'-5 1/8")
TOSHIBA PROVIDED (BY DRAKE) - 1/2" DIA. COOLING WATER HOSE - (164'-7 7/8" / 32'-9 41/16")
FLOW SWITCH *
FS
1/2" DIA. COOLING WATER HOSE - (65'-7 3/8" / 98'-5 1/8")
MAGNET (GRADIENT COIL)
REFRIGERATOR

NOTE:
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FLOW SWITCH*
PROVIDED BY TOSHIBA

(T)	THERMOMETER CONTAINED IN MANIFOLD
(P)	PRESSURE GAUGE CONTAINED IN MANIFOLD
FM	FLOW METER CONTAINED IN MANIFOLD
F1	FILTER PROVIDED BY TOSHIBA AND INSTALLED BY CUSTOMER/CONTRACTOR
F2	FILTER (150 MICRON) SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR
FS	FLOW SWITCH (SEE *) PROVIDED BY TOSHIBA
V	VALVES CONTAINED IN MANIFOLD
V1 & V2	SHUT OFF VALVE SUPPLIED BY TOSHIBA AND INSTALLED BY CUSTOMER/CONTRACTOR
V3 – V5	SHUT OFF VALVE SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR
BFP	BACK FLOW PREVENTER SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR

ALL PIPING BETWEEN CHILLER, MANIFOLD, AND COMPONENTS OF THE VANTAGE SYSTEM SUPPLIED AND INSTALLED BY CUSTOMER/CONTRACTOR

NOTE:
THIS CHILLER SYSTEM HAS TWO SEPARATE WATER LOOPS. THE FIRST WATER LOOP IS FROM THE CUSTOMER'S CHILLER UNIT TO AN INDOOR WATER TO WATER HEAT EXCHANGER. THIS LOOP CAN CONTAIN A GLYCOL / WATER MIXTURE. THE SECOND WATER LOOP (ON THE OTHER SIDE OF THE WATER TO WATER HEAT EXCHANGER) MUST CONTAIN DISTILLED WATER (SUPPLIED BY TAMS CE).

VANTAGE SYSTEMS CAN ONLY USE DISTILLED WATER (NO GLYCOL ALLOWED) IN THIS SECOND DISTILLED WATER LOOP. THE WATER TO WATER HEAT EXCHANGER DISSIPATES THE HEAT BETWEEN THE TWO SEPARATE WATER LOOPS AND MAINTAINS THE INTEGRITY OF THE DISTILLED WATER.

REVISED: 10-30-07

1 WATER COOLING FACILITIES CONFIGURATION

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING
(MRI SCAN ROOM – VANTAGE/TITAN)

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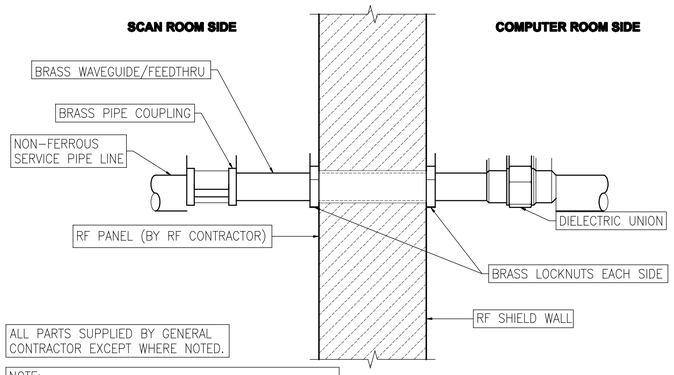
DATE: **01-07-08**
SCALE: **1/4" = 1'-0"**
DRAWN: **G.S.P.**
QUOTE: N/A
PROJECT NO.
TYPICALS

P2

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

TOSHIBA RECOMMENDS THAT A PRE–ACTION PROTECTION SYSTEM (DRY PIPE SPRINKLER SYSTEM) BE INSTALLED BY THE CUSTOMER/CONTRACTOR. TOSHIBA RECOMMENDS THE PRE–ACTION PROTECTION SYSTEM TO MINIMIZE GROUNDING ISSUES THAT CAN ARISE UTILIZING WET TYPE SPRINKLER SYSTEMS. A WET TYPE SPRINKLER SYSTEM CAN BE UTILIZED PROVIDED THE CUSTOMER ASSUMES RESPONSIBILITY OF ALL GROUNDING AND IMAGE ARTIFACT ISSUES THAT MAY RESULT FROM THE USE OF WET SYSTEM. IF A WET–TYPE SPRINKLER SYSTEM IS USED, THE LOCATION OF THE PIPE PENETRATION, MATERIAL AND CONSTRUCTION IS STRICTLY LIMITED AS SHOWN BELOW.



ALL PARTS SUPPLIED BY GENERAL CONTRACTOR EXCEPT WHERE NOTED.

NOTE:
DIELECTRIC UNIONS MUST BE USED TO CONNECT PIPES TO THE WAVEGUIDE OUTSIDE THE RF ENCLOSURE.

STANDING WATER WITHIN THE SPRINKLER PIPES IN THE RF ENCLOSURE HAS BEEN KNOWN TO ACT AS A GROUND AND A CAUSE OF IMAGE ARTIFACTS. THESE ISSUES CAN DEVELOP OVERTIME.

WAVE GUIDES ARE REQUIRED FOR SPRINKLER LINES. THE REQUIRED LENGTH OF THE WAVE GUIDE DEPENDS ON THE DIAMETER OF THE SPRINKLER LINE.

EXCEPT FOR THE BLAZE MASTER PVC PIPE FIRE SPRINKLER SYSTEM, WHICH CANNOT BE USED AS PART OF A WET PIPE SYSTEM, ALL SPRINKLER LINES ARE CONDUCTIVE. THEY ARE ALSO MECHANICALLY ATTACHED TO THE BUILDING, WHICH MAKES THEM GROUNDED. THUS IF A SPRINKLER LINE IS ATTACHED TO THE RF ENCLOSURE, THE RF ENCLOSURE ALSO BECOMES GROUNDED TO THE BUILDING.

WET SPRINKLER SYSTEM CAN BE SPECIFIED FOR USE IN THE RF ENCLOSURE. STANDARD STEEL PIPES CAN BE USED OUTSIDE THE RF ENCLOSURE, BUT COPPER, BRASS, OR 304 STAINLESS STEEL PIPES SHOULD BE USED WITHIN THE RF ENCLOSURE. THE WAVE GUIDE FOR THE SPRINKLER PIPE MUST BE LOCATED WITHIN 3' FROM THE EDGE OF THE FILTER PANEL.

IF A BRASS OR OTHER APPROPRIATE FEED–THROUGH WAVE GUIDE IS INSTALLED ABOVE THE FILTER PANEL AREA, THE SPRINKLER PIPE OUTSIDE THE RF ENCLOSURE MUST BE CONNECTED TO THE WAVE GUIDE VIA A DIELECTRIC UNION TO ISOLATE THE GROUNDED SPRINKLER PIPE FROM THE RF ENCLOSURE.

THE SPRINKLER LINE INSIDE THE RF ENCLOSURE MUST BE CONNECTED DIRECTLY TO THE WAVE GUIDE, WHICH IS GROUNDED TO THE RF ENCLOSURE. ALL SPRINKLER HEADS WITHIN THE RF ENCLOSURE MUST ORIGINATE FROM THIS PRIMARY LINE.

INSTALLATION OF A DEDICATED SHUT–OFF VALVE FOR THE SPRINKLER SYSTEM FOR THE RF ENCLOSURE IS STRONGLY RECOMMENDED.

THE LOCATION OF THE PENETRATION MUST BE WITHIN 30" ABOVE THE GROUND BUS BAR, WHICH IS THE CENTRAL REFERENCE GROUND.

DIELECTRIC UNIONS MUST BE USED TO CONNECT PIPES TO THE WAVE GUIDE OUTSIDE THE RF ENCLOSURE. ALL WET PIPE SYSTEMS MUST ENTER THE RF ENCLOSURE DIRECTLY ABOVE THE FILTER PANEL.

ONLY BRASS AND COPPER COMPONENTS CAN BE USED IN THE SCAN ROOM. ALL SPRINKLER DROPS THAT PENETRATE THE SCAN ROOM MUST BE ELECTRICALLY BONDED TO THE SCAN ROOM CEILING, AND MUST BE ELECTRICALLY DETACHED FROM THE MAIN SPRINKLER PIPE BY A NONCONDUCTIVE SLEEVE.

IF A SMOKE DETECTOR SYSTEM IS REQUIRED, DO NOT USE A CALL/RECEIVE SYSTEM.

BY SIGNING BELOW THE CUSTOMER/CONTRACTOR ACKNOWLEDGES AND ACCEPTS RESPONSIBILITY OF ANY POTENTIAL ISSUES THAT CAN BE DEVELOP DUE TO CONSTRUCTION, INSTALLATION OR USE OF A WET–TYPE FIRE SPRINKLER SYSTEM. IN THE EVENT THAT ANY ISSUES OR PROBLEMS DEVELOPING DUE TO THE WET–TYPE SPRINKLER SYSTEM, THE CUSTOMER/CONTRACTOR AGREES TO REPAIR, MODIFY, OR REPLACE WET–TYPE FIRE SPRINKLER SYSTEM. TOSHIBA RECOMMENDS A PRE–ACTION PROTECTION SYSTEM (DRY–TYPE SPRINKLER SYSTEM) AND THEREFORE, SHALL NOT ASSUME ANY COSTS OR DOWNTIME PENALTIES ASSOCIATED WITH THE REPAIR, MODIFICATION, OR REPLACEMENT OF WET–TYPE FIRE SPRINKLER SYSTEM.

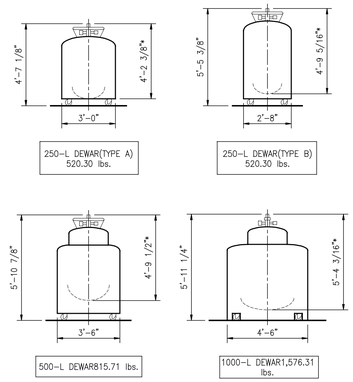
THE TOSHIBA PROJECT INSTALLATION MANAGER IS TO FAX DETAIL WITH CUSTOMER SIGNATURE INCLUDED WITH SITE NAME AND TAMS PROJECT NUMBER TO TAMS SITE PLANNING DEPARTMENT, ATTENTION SITE PLANNING ADMINISTRATOR.
FAX # (714) 544–5893
PROJECT # _____
SITE NAME: _____
CUSTOMER/CONTRACTOR SIGNATURE _____ DATE: _____

REVISED: 10–20–06

1 TYPICAL SPRINKLER PENETRATION

SCALE: NOT TO SCALE

NOTE:
SIZES MARKED WITH (*) INDICATE DEPTH.
LHe DEWAR (MANUFACTURER: CRYOFAB).
MASS INCLUDES THE LHe IN THE DEWAR.



LHe VESSELS - DEWARS

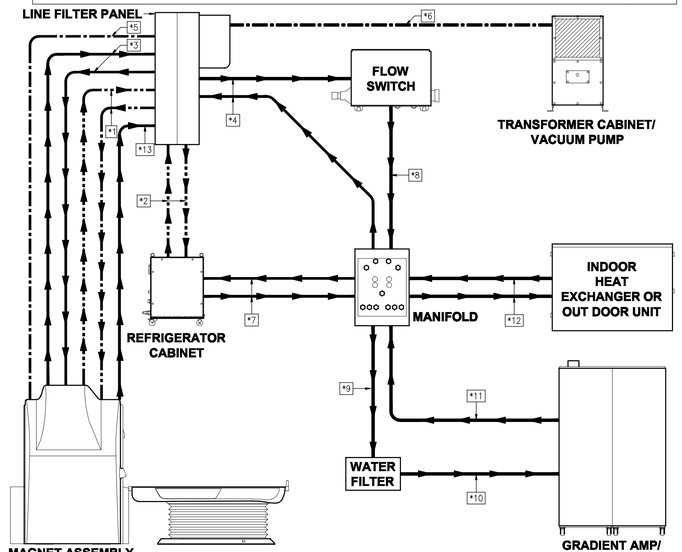
1. THE SIZE OF A LHe DEWAR DIFFERS ACCORDING TO THE SUPPLIER. BE SURE TO CHECK THE SHAPE OF THE DEWAR IN ADVANCE.
2. BE SURE TO USE A NONMAGNETIC DEWAR (STAINLESS STEEL, ALUMINUM).
3. 11'–9 3/4" CLEARANCE IS REQUIRED TO INSERT THE TRANSFER TUBE INTO THE HELIUM CONTAINER.
4. INSURE THE DEWARS HAVE A CLEAR DELIVERY PATH TO MAGNET (CONSIDER DOORS, HALLWAYS, ELEVATORS, ETC.).
5. SET ASIDE AREA FOR HELIUM DEWAR STORAGE DURING INSTALLATION.

REVISED: 10–11–07

2 DEWARS - LHe REPLENISHMENT

SCALE: 1/4" = 1'–0"

NOTE:
IT IS INSTALLATION COORDINATOR'S RESPONSIBILITY FOR VERIFYING AND ORDERING EXTENDED HOSES/PIPES.



*1 + *2 = 42'–7 13/16" (85'–3 5/8")
*3 + *4 = 65'–7 3/8" (98'–5 1/8")
*5 + *6 = 32'–9 11/16" (65'–7 3/8")
*7 = 16'–4 7/8" (32'–9 11/16")
*8 = 3'–3 3/8"
*9 = 49'–2 9/16" (49'–2 9/16")
*10 = 9'–10 1/8" (9'–10 1/8")
*11 = 49'–2 9/16" (49'–2 9/16")
*12 = PROVIDED BY CUSTOMER/CONTRACTOR. EXACT LENGTH TO BE DETERMINE.
*13 = 49'–2 9/16" (62'–4 1/16")
THE DISTANCES SHOWN INDICATE THE STANDARD LENGTH (MAXIMUM LENGTH IN BRACKETS).

NOTE:
REFER TO SHEETS P2 & M3 FOR COOLING WATER AND LINE FILTER PANEL INFORMATION.

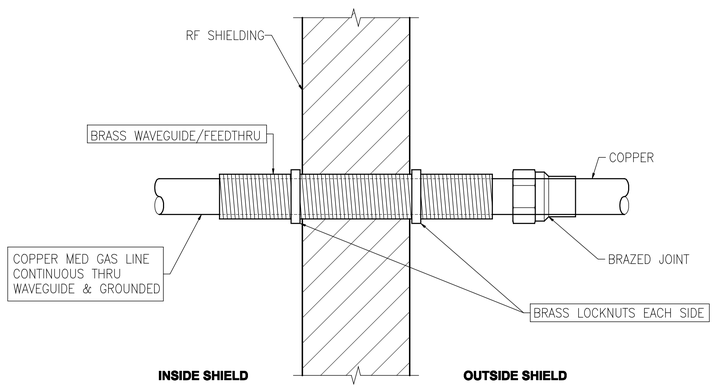
COOLING WATER HOSE
HELIUM HOSE
VACUUM HOSE

REVISED: 01–07–08

3 LIQUID & GAS HOSE CONNECTIONS

SCALE: NOT TO SCALE

EXAMPLE OF MEDICAL GAS THROUGH DUCT (PER CODE)



NOTE:
1. THE THROUGH DUCT OF THE MEDICAL GAS PIPE MUST BE WITHIN APPROXIMATELY 2'–0" OF THE LINE FILTER PANEL.
2. THE FINAL MEDICAL GAS CONNECTION TO THE WAVEGUIDE CANNOT BE MADE UNTIL GROUND ISOLATION MONITORING IS COMPLETE.
3. THE MEDICAL GAS MUST BE GROUNDED TO THE WAVEGUIDE & RF SHIELDING.
4. MOUNT AS CLOSE AS POSSIBLE TO LINE FILTER PANEL.

REVISED: 05–01–06

4 TYPICAL MEDICAL GASES DETAILS (OPTIONAL)

SCALE: NOT TO SCALE

NOTE:
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TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **1/4" = 1'-0"**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

P3

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

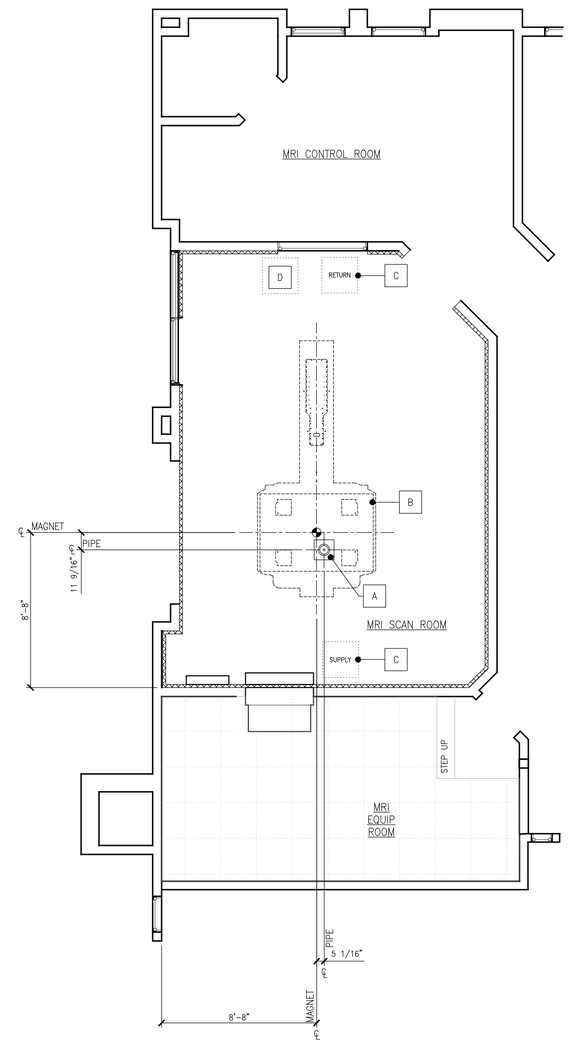
MECHANICAL LEGEND

ITEM	ITEM DESCRIPTION SUPPLIED / INSTALLED BY CUSTOMER / CONTRACTOR	REF.
A	EMERGENCY GHe DISCHARGE PIPE & RF SHIELDING OPENING	(1-5) M2
B	AREA FOR EMERGENCY VENTILATION DUCT WORK (1060 CFM)	--
C	RECOMMENDED SUPPLY/RETURN LOCATION OF AIR CONDITIONING	--
D	RECOMMENDED PASS-THRU WAVE GUIDE FOR PRESSURE EQUALIZATION	--

NOTE:
ALL MATERIAL IN SCAN ROOM MUST BE NON FERROUS.

ENTIRE EMERGENCY GHE DISCHARGE PIPE MUST BE MADE FROM ALUMINUM OR STAINLESS STEEL.

REVISED: 05-01-06



MECHANICAL LAYOUT

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DATE: **01-07-08**

SCALE: **1/4" = 1'-0"**

DRAWN: **G.S.P.**

QUOTE: N/A

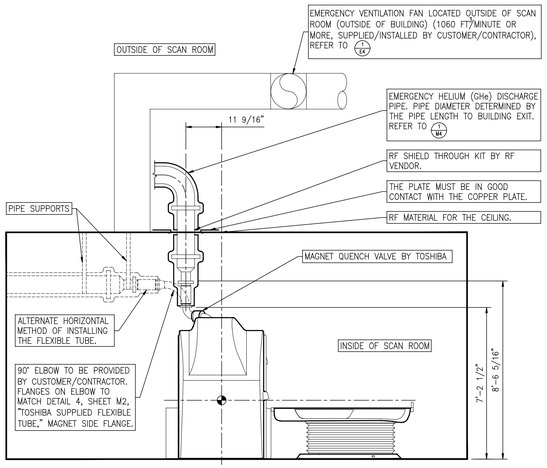
PROJECT NO.
TYPICALS

M1

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

MATERIAL:
ALUMINUM OR STAINLESS STEEL.

AREA ABOVE AND BEHIND MAGNET SHOULD BE FREE OF OBSTRUCTION FOR DISCHARGE PIPE AND EMERGENCY FAN.

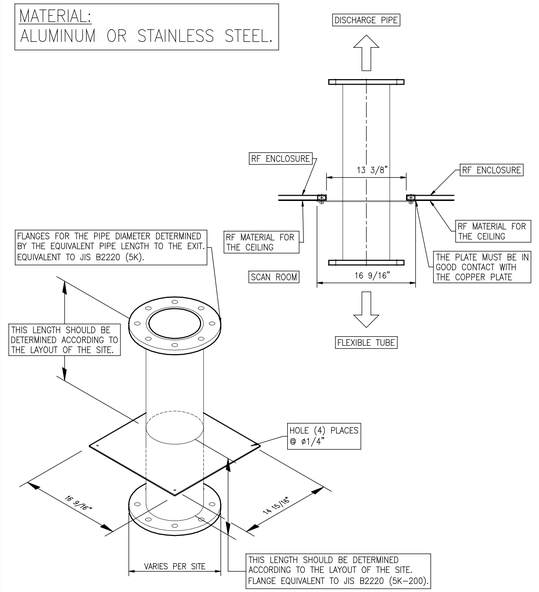

EMERGENCY VENTILATION FAN LOCATED OUTSIDE OF SCAN ROOM (OUTSIDE OF BUILDING) (1060 FT³/MINUTE OR MORE, SUPPLIED/INSTALLED BY CUSTOMER/CONTRACTOR), REFER TO 1/E2
OUTSIDE OF SCAN ROOM
EMERGENCY HELIUM (GHe) DISCHARGE PIPE. PIPE DIAMETER DETERMINED BY THE PIPE LENGTH TO BUILDING EXIT. REFER TO 1/M2
11 9/16"
RF SHIELD THROUGH KIT BY RF VENDOR.
THE PLATE MUST BE IN GOOD CONTACT WITH THE COPPER PLATE.
RF MATERIAL FOR THE CEILING.
PIPE SUPPORTS
MAGNET QUENCH VALVE BY TOSHIBA
ALTERNATE HORIZONTAL METHOD OF INSTALLING THE FLEXIBLE TUBE.
INSIDE OF SCAN ROOM
90° ELBOW TO BE PROVIDED BY CUSTOMER/CONTRACTOR. FLANGES ON ELBOW TO MATCH DETAIL 4, SHEET M2, "TOSHIBA SUPPLIED FLEXIBLE TUBE," MAGNET SIDE FLANGE.
7'-2 1/2"
8'-4 5/16"

REVISED: 10-30-07

1 FAN AND EMERGENCY HELIUM (GHe) DISCHARGE PIPE DETAIL

SCALE: NOT TO SCALE

MATERIAL:
ALUMINUM OR STAINLESS STEEL.


DISCHARGE PIPE
RF ENCLOSURE
13 3/8"
RF ENCLOSURE
FLANGES FOR THE PIPE DIAMETER DETERMINED BY THE EQUIVALENT PIPE LENGTH TO THE EXIT. EQUIVALENT TO JIS B2220 (5K).
RF MATERIAL FOR THE CEILING
RF MATERIAL FOR THE CEILING
THE PLATE MUST BE IN GOOD CONTACT WITH THE COPPER PLATE
SCAN ROOM
16 9/16"
FLEXIBLE TUBE
THIS LENGTH SHOULD BE DETERMINED ACCORDING TO THE LAYOUT OF THE SITE.
HOLE (4) PLACES Ø ø1/4"
15 9/16"
14 15/16"
VARIES PER SITE.
THIS LENGTH SHOULD BE DETERMINED ACCORDING TO THE LAYOUT OF THE SITE. FLANGE EQUIVALENT TO JIS B2220 (5K-200).

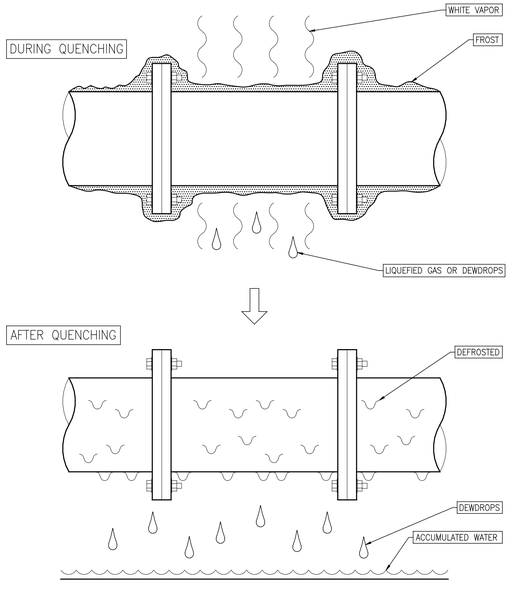
NOTE:
TO BE PROVIDED BY RF VENDOR.

REVISED: 12-08-05

2 RF SHIELD THROUGH KIT

SCALE: NOT TO SCALE

IF THE QUENCH PIPE IS NOT THERMALLY INSULATED, THE FOLLOWING WILL OCCUR:



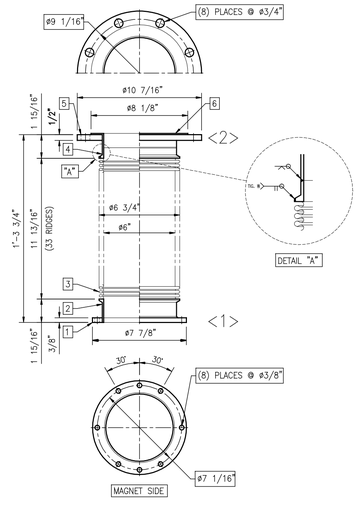
NOTE:
EVEN IF THE PIPE IS THERMALLY INSULATED, CONDENSATION MAY OCCUR. THEREFORE, ELECTRICAL WIRING MUST NOT BE LOCATED UNDER THE PIPE.

REVISED: 12-08-05

3 QUENCH PIPE CONDENSATION

SCALE: NOT TO SCALE

MATERIAL:
ALUMINUM OR STAINLESS STEEL.



NO.	PART NAME	MATERIAL	Q'TY	NOTE
⟨1⟩	FIXED FLANGE	SUSF304	1	SPECIAL
⟨2⟩	END PIPE	SUS304	1	125ASch10S
⟨3⟩	BELLOWS	SUS304	1	150A-OS Type
⟨4⟩	END PIPE	SUS304	1	150ASch10S
⟨5⟩	ROTARY FLANGE	SUSF304	1	STANDARD JIS5K
⟨6⟩	LAP JOINT	SUS304	1	150ASch10S

REVISED: 12-08-05

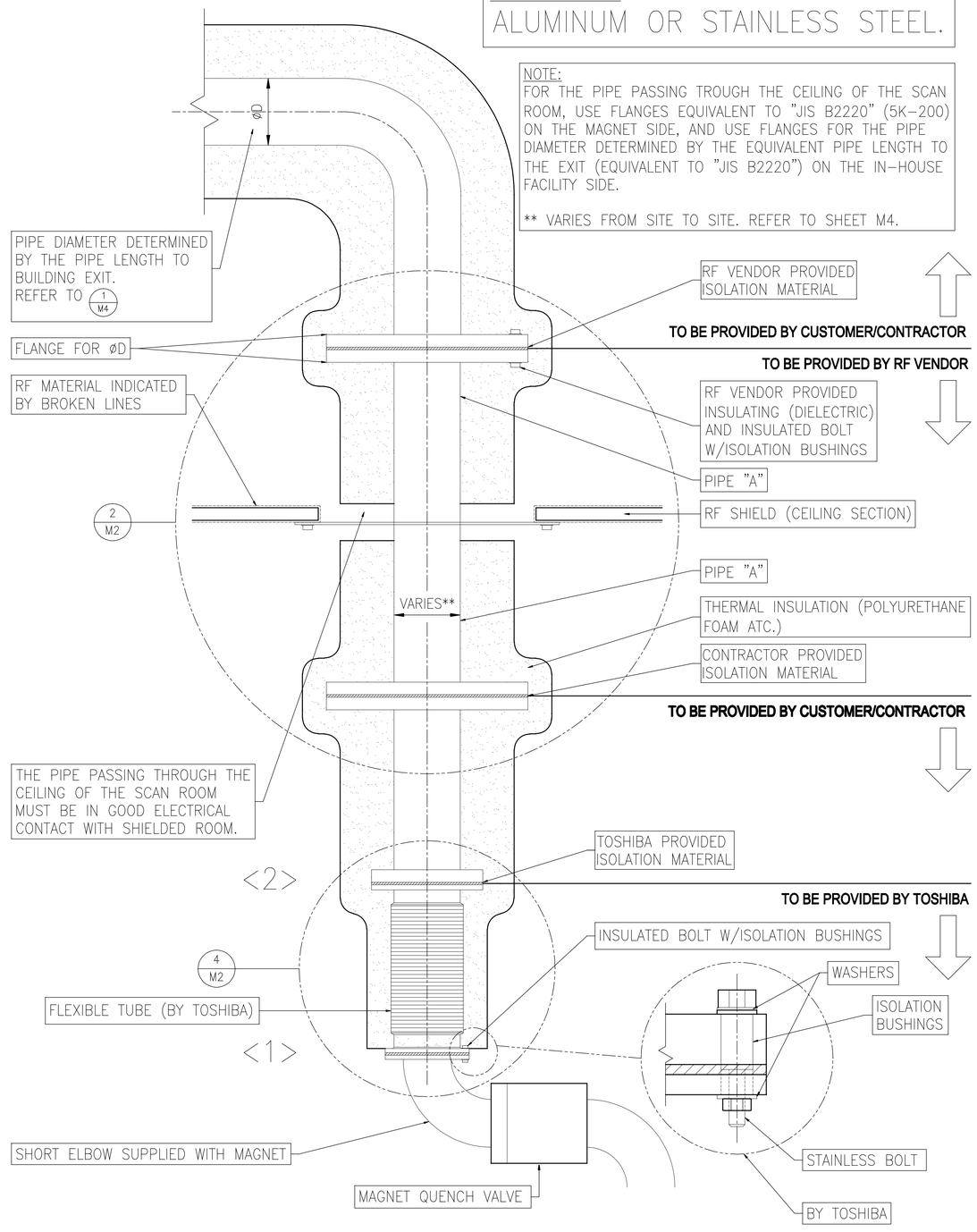
4 TOSHIBA SUPPLIED FLEXIBLE TUBE

SCALE: 2" = 1'-0"

MATERIAL:
ALUMINUM OR STAINLESS STEEL.

NOTE:
FOR THE PIPE PASSING TROUGH THE CEILING OF THE SCAN ROOM, USE FLANGES EQUIVALENT TO "JIS B2220" (5K-200) ON THE MAGNET SIDE, AND USE FLANGES FOR THE PIPE DIAMETER DETERMINED BY THE EQUIVALENT PIPE LENGTH TO THE EXIT (EQUIVALENT TO "JIS B2220") ON THE IN-HOUSE FACILITY SIDE.

** VARIES FROM SITE TO SITE. REFER TO SHEET M4.


ØD
PIPE DIAMETER DETERMINED BY THE PIPE LENGTH TO BUILDING EXIT. REFER TO 1/M4
FLANGE FOR ØD
RF MATERIAL INDICATED BY BROKEN LINES
RF VENDOR PROVIDED ISOLATION MATERIAL
TO BE PROVIDED BY CUSTOMER/CONTRACTOR
TO BE PROVIDED BY RF VENDOR
RF VENDOR PROVIDED INSULATING (DIELECTRIC) AND INSULATED BOLT W/ISOLATION BUSHINGS
PIPE "A"
2/M2
RF SHIELD (CEILING SECTION)
PIPE "A"
VARIES**
THERMAL INSULATION (POLYURETHANE FOAM ATC.)
CONTRACTOR PROVIDED ISOLATION MATERIAL
TO BE PROVIDED BY CUSTOMER/CONTRACTOR
THE PIPE PASSING THROUGH THE CEILING OF THE SCAN ROOM MUST BE IN GOOD ELECTRICAL CONTACT WITH SHIELDED ROOM.
TOSHIBA PROVIDED ISOLATION MATERIAL
⟨2⟩
TO BE PROVIDED BY TOSHIBA
INSULATED BOLT W/ISOLATION BUSHINGS
4/M2
WASHERS
ISOLATION BUSHINGS
FLEXIBLE TUBE (BY TOSHIBA)
⟨1⟩
STAINLESS BOLT
SHORT ELBOW SUPPLIED WITH MAGNET
MAGNET QUENCH VALVE
BY TOSHIBA

REVISED: 05-01-06

5 EMERGENCY DISCHARGE PIPE ROUTING

SCALE: NOT TO SCALE

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TYPICAL DRAWING
(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**
SCALE: **AS NOTED**
DRAWN: **G.S.P.**
QUOTE: N/A
PROJECT NO.
TYPICALS

M2

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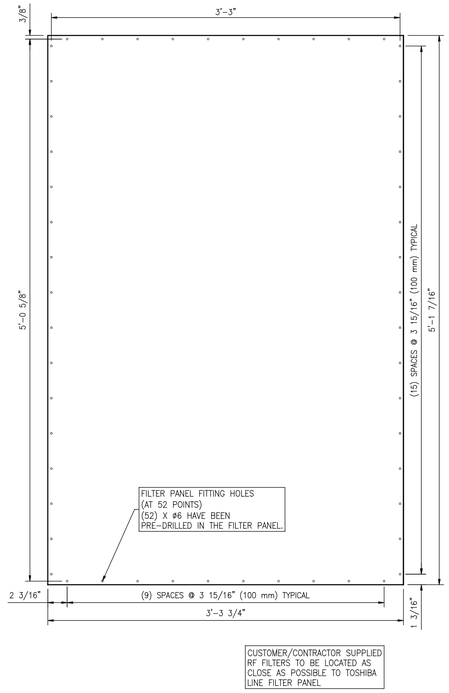
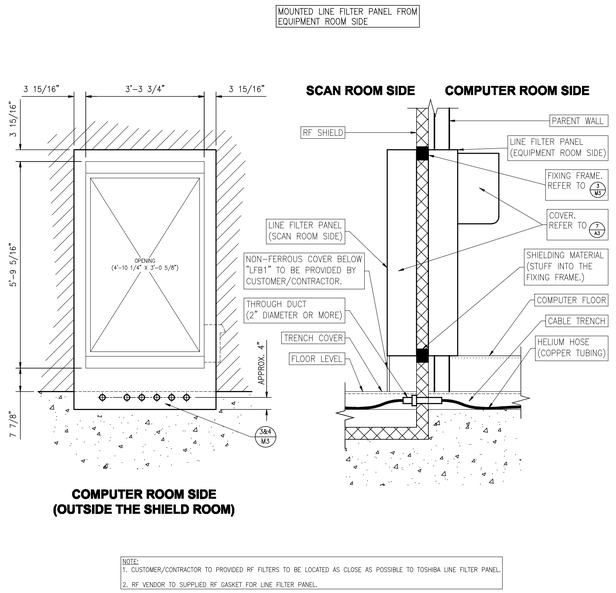


REVISED: 12-20-07

1 INSTALLATION SURFACE OF THE FILTER PANEL

SCALE: 1 1/2" = 1'-0"



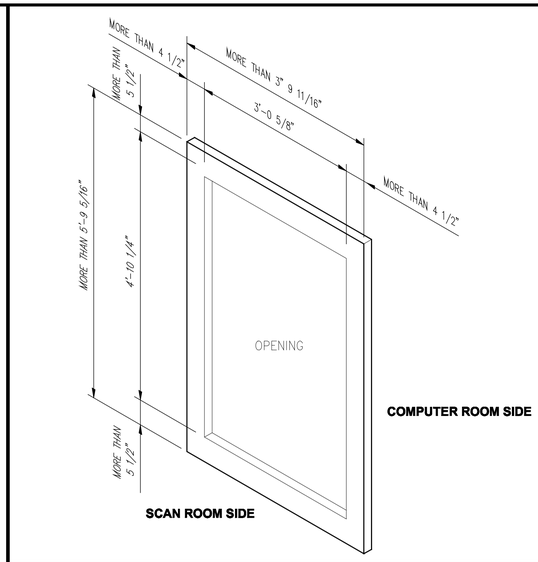
COMPUTER ROOM SIDE
(OUTSIDE THE SHIELD ROOM)

NOTE:
1. CUSTOMER/CONTRACTOR TO PROVIDED RF FILTERS TO BE LOCATED AS CLOSE AS POSSIBLE TO TOSHIBA LINE FILTER PANEL.
2. RF VENDOR TO SUPPLIED RF GASKET FOR LINE FILTER PANEL.

REVISED: 12-20-07

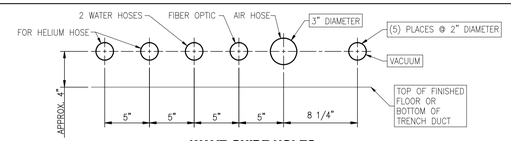
2 INSTALLATION AREA OF THE FILTER PANEL

SCALE: 1/2" = 1'-0"



SCAN ROOM SIDE

COMPUTER ROOM SIDE

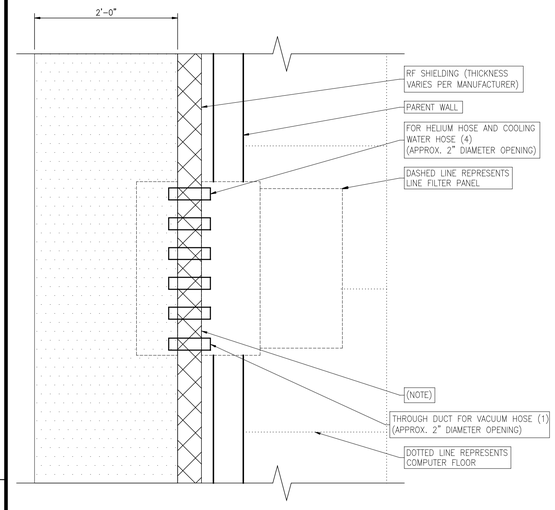


WAVE GUIDE HOLES
(VIEW FROM SCAN ROOM SIDE)

REVISED: 12-20-07

3 DIMENSIONS OF THE FILTER FRAME & WAVE GUIDE DETAIL

SCALE: 1 1/2" = 1'-0" (ISOMETRIC N.T.S.)

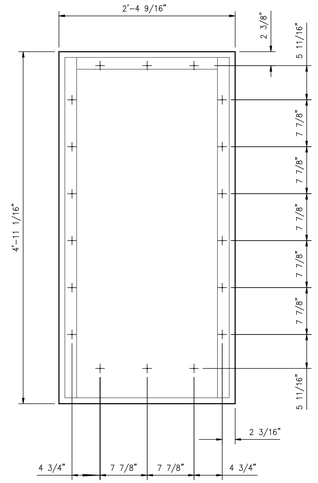


PLAN VIEW

REVISED: 12-18-06

4 FILTER BOX AND FLOOR TRENCHES

SCALE: 1" = 1'-0"



NOTE:
CONTRACTOR TO PROVIDE 5/8" PLYWOOD OR NON-FERROUS MATERIAL BACKING MATERIAL FOR INSTALLING WALL CABINET.

REVISED: 04-25-07

5 MOUNTING LOCATION DIMENSIONS FOR WALL CABINET

SCALE: 1" = 1'-0"

NOTE:
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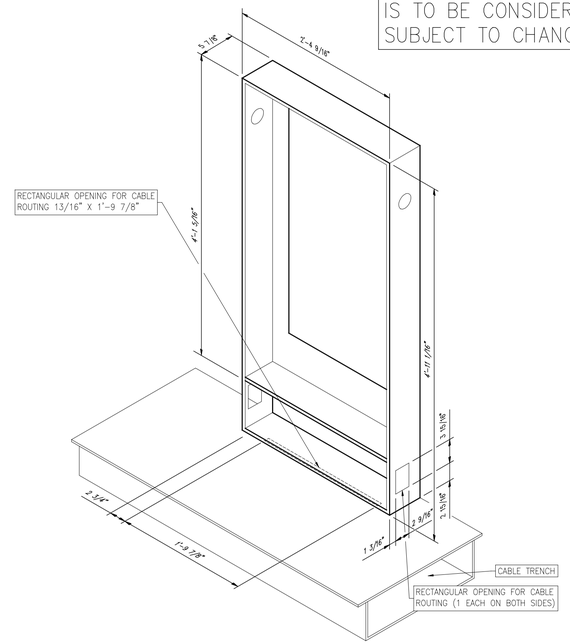
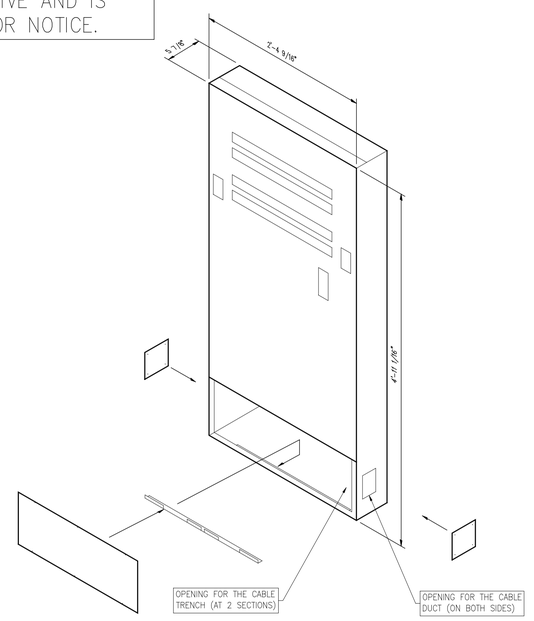


REVISED: 04-25-07

5 WALL CABINET CABLE TRENCH AND DUCT LOCATION DIMENSION DRAWING

SCALE: 1" = 1'-0"



REVISED: 04-25-07

6 WALL CABINET STRUCTURE OF THE BOTTOM OF THE FRAME

SCALE: 1" = 1'-0"

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

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DATE: **01-07-08**

SCALE: **AS NOTED**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

M3

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

MATERIAL:
ALUMINUM OR STAINLESS STEEL.

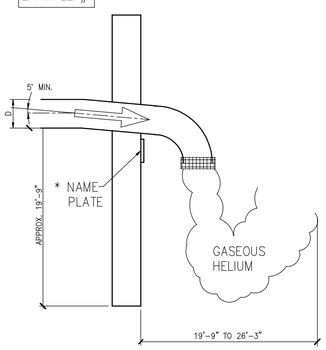
NOTE:

IF QUENCHING OCCURS, APPROXIMATELY 17,305 FT3 OF GASEOUS HELIUM IS DISCHARGED TO THE OUTSIDE IN APPROXIMATELY 20 MINUTES.

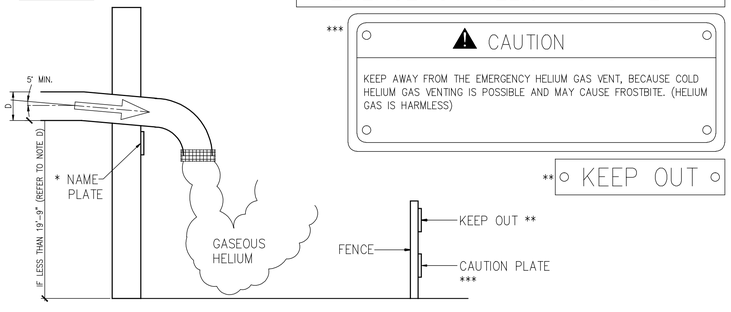
GASEOUS HELIUM ITSELF IS COLORLESS AND ODORLESS, NON-TOXIC, AND NONFLAMMABLE. HOWEVER, A LARGE AMOUNT OF GASEOUS HELIUM IS DISCHARGED AT VERY LOW TEMPERATURE, AND THEREFORE THE FOLLOWING POINTS MUST BE THOROUGHLY DISCHARGED WITH THE PERSON IN CHARGE OF MANAGEMENT OF THE HOSPITAL BUILDING TO DETERMINE THE PIPING DESIGN. PROTECTION MATERIAL (EX. PLYWOOD, BRICK, OR ANY MATERIAL WHICH CAN PREVENT DAMAGE TO BUILDING) IS HIGHLY RECOMMENDED TO PROTECT ANY PORTION OF BUILDING EXPOSED TO THE QUENCHING GASEOUS HELIUM.

FOR EXAMPLE, THE CROYOGENIC GASES ARE DISCHARGED AS SHOWN BELOW. REFER TO THIS EXAMPLE WHEN DESIGNING THE VENT.

EXAMPLE #1



EXAMPLE #2


* EMERGENCY HELIUM GAS VENT
*** CAUTION
KEEP AWAY FROM THE EMERGENCY HELIUM GAS VENT, BECAUSE COLD HELIUM GAS VENTING IS POSSIBLE AND MAY CAUSE FROSTBITE. (HELIUM GAS IS HARMLESS)
** KEEP OUT
5' MIN.
D
* NAME PLATE
IF LESS THAN 19'-9" (REFER TO NOTE D)
GASEOUS HELIUM
FENCE
KEEP OUT **
CAUTION PLATE ***

GENERAL

A. IN CASE YOUR EXISTING EXHAUST DOES NOT FULFILL THE DIMENSIONAL REQUIREMENTS, IT MUST BE CHANGE/MODIFIED TO ONE OF THE EXAMPLES.

B. IN CASE THE EXHAUST MUST BE CHANGED, TAKE SPECIAL CARE OF THE PROPER MESH TO BE USED (THE MESH SIZE IS TO BE 3/8", WITH 18 GAUGE ROUNDWIRES AND THE MESH AREA AS DESCRIBED ABOVE).

C. DO NOT INSTALL A MESH INSIDE THE QUENCH TUBE (REASON – IN CASE OF A QUENCH, THE MESH INSIDE THE QUENCH TUBE COULD BLOCK THE EXHAUST).

D. TO AVOID THE RISK OF INJURY FROM COLD BURNS, IT IS RECOMMENDED THAT ACCESS TO THE QUENCH VENT MUST BE RESTRICTED TO WITHIN MINIMUM 19'-9" OF THE EXTERNAL EXIT. IF THE HEIGHT OF THE EXTERNAL QUENCH PIPE IS LESS THAN 19'-9" (EXAMPLE #2), THEN IT IS CUSTOMER'S RESPONSIBILITY TO DESIGNATED AND ENCLOSED A RESTRICTED ACCESS AREA WITH FENCE, CHAIN, ETC. IN ADDITION, APPLY THE CAUTION PLATE.

E. **THE GASEOUS HELIUM IS VERY HAZARDOUS.** THEREFORE, THE GASEOUS HELIUM MUST BE CONDUCTED AND DISCHARGED TO AN OPEN SPACE WITH NO BUILDINGS, PASSAGE, WINDOWS, PARKING LOT, PRIVATE HOUSE, BASEMENT, EAVES, DRY AREA OR TRAFFIC NEARBY.

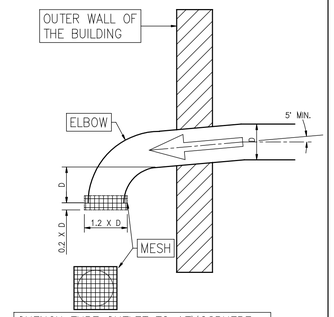
F. IT IS DESIRABLE THAT THE END OF THE CHIMNEY PIPE BE HIGHER THAN THE TOP OF THE BUILDING. ERECT CHIMNEY PIPING WHENEVER POSSIBLE.

G. LOUVER OF THE PIPE SHOULD FACE UPWARD OR USE UPWARD DEFLECTING PLATE.

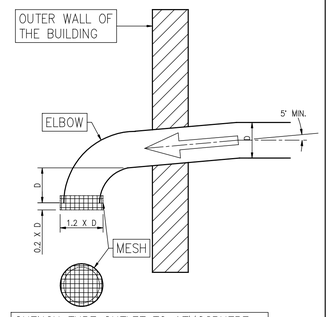
H. PLEASE CONSULT WITH TOSHIBA REPRESENTATIVE FOR MORE DETAILS.

J. STAINLESS STEEL MESH NEEDED.

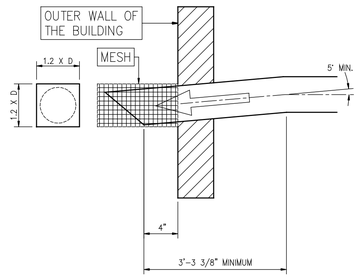
K. **DANGER OF ANOXIA AND CRYOGENIC BURNS.** IF A LARGE AMOUNT OF CRYOGENIC GASEOUS HELIUM IS DISCHARGED AT ONE TIME, THE OXYGEN CONCENTRATION IN THE AREA DROPS TEMPORARILY (DURING GAS DISCHARGE), CREATING A RISK OF ANOXIA. IN ADDITION, IF A PERSON IS EXPOSED DIRECTLY OR INDIRECTLY TO THE DISCHARGED GAS, CRYOGENIC BURNS MAY RESULT.



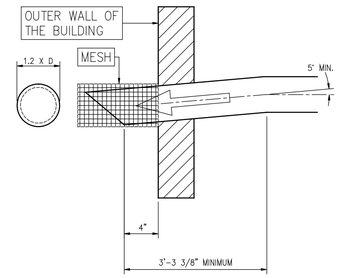
QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 1A



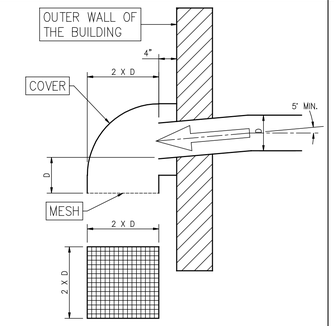
QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 1B



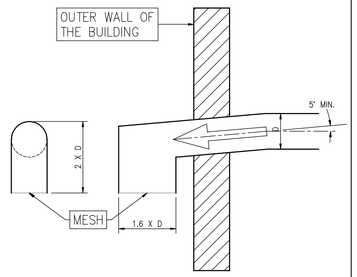
QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 7A
(LAST 3'-3 3/8" ANGLED DOWN 5° MINIMUM)



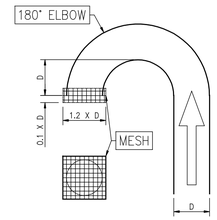
QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 7B
(LAST 3'-3 3/8" ANGLED DOWN 5° MINIMUM)



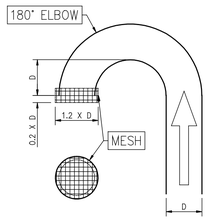
QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 2



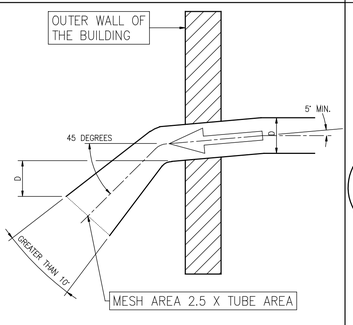
QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 3



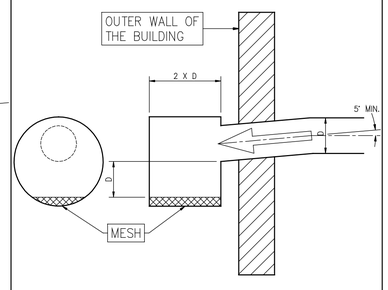
QUENCH TUBE OUTLET TO ATMOSPHERE – VERTICAL 1A – WHEN A STAINLESS STEEL MESH IS USED



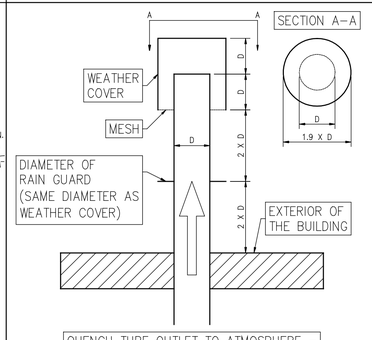
QUENCH TUBE OUTLET TO ATMOSPHERE – VERTICAL 1B – WHEN A STAINLESS STEEL MESH IS USED



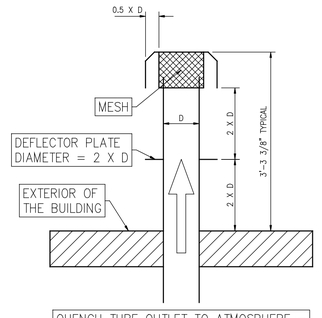
QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 4



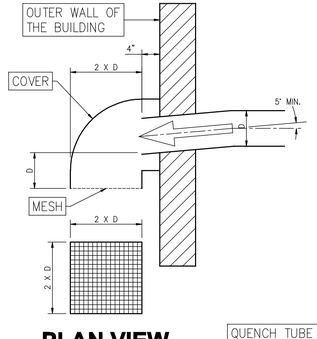
QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 5



QUENCH TUBE OUTLET TO ATMOSPHERE – VERTICAL 2

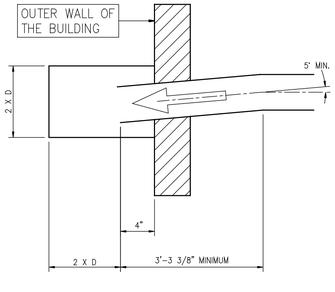


QUENCH TUBE OUTLET TO ATMOSPHERE – VERTICAL 3

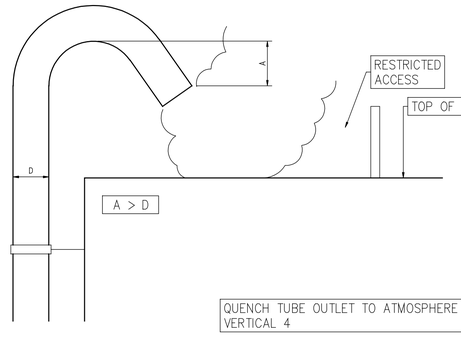


PLAN VIEW

QUENCH TUBE OUTLET TO ATMOSPHERE – HORIZONTAL 6



SIDE VIEW



QUENCH TUBE OUTLET TO ATMOSPHERE – VERTICAL 4

NOTE:
THE TOP OF THE BUILDING MUST BE SPECIFIED AS A RESTRICTED ACCESS AREA.

FOR PREVENTING SNOW FROM ENTERING THE PIPE (MUST BE SPECIFIED AS A RESTRICTED ACCESS AREA.)

THE AMOUNT OF SNOWFALL AT THE INSTALLATION SITE MUST ALSO BE CONSIDERED.

REVISED: 03-08-06

1 RECOMMENDED QUENCH TUBE EXHAUST SPECIFICATIONS (TYPICAL)

SCALE: NOT TO SCALE

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REV.	DATE	DESCRIPTION	INT.

FOR REFERENCE ONLY. NOT TO BE USED FOR CONSTRUCTION PURPOSES.

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

THESE TOSHIBA PLANS ARE FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN THAT AGREED UPON BETWEEN TOSHIBA AND THE CUSTOMER. THESE SITE PLANS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.

DATE: **01-07-08**

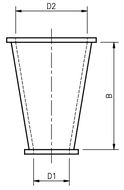
SCALE: **AS NOTED**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

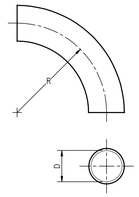
M4



D1 = SMALL INSIDE DIAMETER OF TUBE (FLEX TUBE SIDE)
D2 = LARGE INSIDE DIAMETER OF TUBE (QUENCH TUBE SIDE)
B = LENGTH OF DIFFUSER

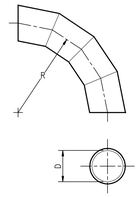
THE RECOMMENDED DIFFUSER DESIGN FOR MINIMUM PRESSURE LOSS IS THE RATIO OF: B/D1 BEING GREATER THAN 2.5

SEAMLESS ELBOW



MATERIAL:
ALUMINUM OR STAINLESS STEEL.

4 SEGMENT ELBOW



THE WALLS OF ALL BENDS SHOULD BE SMOOTH AND SHOULD HAVE CENTER LINE RADIUS TO INTERNAL PIPE DIAMETER RATIO OF 1.5 TO 5.0. IF SINGLE–PIECE BENDS ARE NOT READILY AVAILABLE, A BEND MAY BE FABRICATED USING STRAIGHT SECTIONS, HOWEVER, IT MUST COMPRISE A MINIMUM OF 4 SEGMENTS.

R/D > 1.5 AND < 5.0

TABLE 1: MAXIMUM PERMITTED TUBE LENGTHS

DIAMETER OF PIPE	LENGTH OF PIPE
6"	95'–2"
7"	180'–5"
8"	269'–0"
9"	492'–2"

TABLE 2: EFFECTIVE LENGTH OF BENDS (TOTAL FRICTIONAL LOSS OF BEND)

	EFFECTIVE LENGTH PER BEND			
PIPE DIAMETER	90° SEAMLESS	45° SEAMLESS	90° SEGMENTED	45° SEGMENTED
6"	5'–8 1/8"	3'–8 1/8"	9'–10 1/8"	6'–6 3/4"
7"	6'–9 1/2"	4'–5 1/8"	11'–9 3/4"	7'–6 9/16"
8"	7'–11 1/4"	5'–1 13/16"	8'–8 5/16"	8'–11 1/2"
9"	8'–8 5/16"	5'–8 1/8"	15'–1 1/8"	9'–10 1/8"

NOTE:
INTERPOLATE FOR VALUES BETWEEN 0° – 45° AND 45° – 90°. DATA ONLY TO BE USED FOR BENDS WHERE R/D IS BETWEEN 1.5 AND 5.0.

FIGURE 1

QUENCH TUBE SPECIFIC PG INFORMATION FOR VANTAGE

GENERAL

A. THE THERMAL ENERGY DISSIPATED DURING A QUENCH CAUSES THE LIQUID HELIUM TO BOIL OFF RAPIDLY. THE SYSTEM MUST BE ABLE TO EXHAUST THE LARGE COLUMN OF GAS GENERATED AT THE APPROXIMATE EXPANSION RATIO OF 1:700 FROM LIQUID AT 4.2K TO ROOM TEMPERATURE GAS. THE EXHAUST SYSTEM IS CRITICAL TO THE SAFE OPERATION OF THE MAGNET AND THE GUIDELINES SET FORTH IN THIS SECTION MUST BE FOLLOWED.

B. * USE ONLY ALUMINUM OR STAINLESS STEEL MATERIAL FOR THE QUENCH TUBE. DO NOT USE ANY PLASTIC MATERIAL! PLASTIC MATERIAL WOULD BREAK INTO PIECES DURING A QUENCH OR REFILLING THE MAGNET! DO NOT USE FLEXIBLE HOSES/PIPES OF ANY KIND. THEY WILL NOT HOLD THE PRESSURE DURING A QUENCH!

C. * PREVENT THE QUENCH TUBE FROM COLLECTING WATER OR MOISTURE INSIDE THE TUBE. THERE MUST NOT BE ANY POSSIBILITY OF FLOODING THE QUENCH TUBE WITH WATER OR MOISTURE.

BASIS FOR DESIGN CALCULATIONS

D. IT IS DIFFICULT TO CALCULATE THE DROP IN PRESSURE ALONG THE QUENCH TUBE DURING A QUENCH BECAUSE OF THE COMPRESSIBILITY OF THE GAS. THIS IS FURTHER COMPLICATED BY THE NONLINEAR HEAT INPUTS ALONG THE LENGTH OF THE TUBE AND THE EFFECT ON THE GAS DENSITY PROFILE.

E. THE RESULT OF THE COMPUTED LOSS IN PRESSURE DIFFERS FROM THAT OBTAINED BY EXPERIMENT. FOR THIS REASON, THE CALCULATIONS NEEDED TO SIZE THE QUENCH TUBE BY DETERMINING THE THEORETICAL DROP IN PRESSURE ARE NO LONGER PERFORMED.

F. INSTEAD, THE SIZING PROCEDURE IS BASED ON TABULATED DATA WHICH IS USED IN SIMPLE ARITHMETIC CALCULATIONS. THE TABLES ARE BASED ON EMPIRICAL DATA DERIVED FROM QUENCH TEST PRESSURE LOSS MEASUREMENT (REQUIRED AS PART OF THE REGULATORY APPROVAL PROCESS).

COMPONENTS OF THE QUENCH TUBE

THE FOLLOWING SPECIFIC DESIGN RULES APPLY TO THE COMPONENTS MAKING UP THE QUENCH TUBE:

G. THE QUENCH TUBE COMPRISES STRAIGHT TUBE SECTIONS, BENDS (UP TO 90 DEGREES) AND A DIFFUSER, IF REQUIRED. THE END OF THE TUBE HAS TO BE CLOSED WITH A PROTECTIVE RAIN GUARD.

H. THERMAL CONTRACTIONS HAVE TO BE FACTORED IN. IN ADDITION, THE WEIGHT OF THE TUBE SHOULD BE SUPPORTED AGAINST EXTERNAL FORCES. THE LOAD OF THE TUBE OR THE CORRESPONDING SUPPORT CONSTRUCTION SHOULD NOT BE SUPPORTED BY THE QUENCH VALVE.

J. APPROPRIATE CRYOGENIC SEALS MUST BE USED BETWEEN ALL JOINT FACES.

K. THE END OF THE QUENCH TUBE MUST BE PROTECTED FROM THE OUTSIDE ELEMENTS, E.G. RAIN, SNOW, OR OBJECTS WHICH COULD ENTER AND CAUSE BLOCKAGE. THIS PROTECTION WOULD BE IN THE FORM OF A MESH WITH A FREE DIAMETER DOUBLE THAT OF THE QUENCH TUBE.

L. WHERE THE QUENCH TUBE EXITS THROUGH A FLAT ROOF, THE OUTLET MUST BE ABOVE A LEVEL WHERE WATER COULD ENTER IN THE EVENT THAT THE ROOF DRAINS BECOME BLOCKED. IN THE CASE OF A HORIZONTAL EXIT THROUGH A WALL, THE OUTLET SHOULD BE ANGLED DOWNWARD SLIGHTLY TO HELP PREVENT RAIN INGRESS. THE ANGLE SHOULD BE AT LEAST 5° FOR THE LAST 3'–3 3/8" OF THE TUBE.

M. WHERE THE QUENCH TUBE EXITS VERTICALLY, A RAIN COVER MUST ALSO BE FITTED. THE MESH FREE DIAMETER SHOULD BE FOUR TIMES THE DIAMETER AREA OF THE QUENCH TUBE. THE CLEARANCE BETWEEN RAIN GUARD AND THE MESH SHOULD EQUAL THE RADIUS OF THE TUBE. A SUITABLE DEFLECTOR PLATE SHOULD BE WELDED TO THE TUBE WHERE IT EXITS THE ROOF TO PREVENT HELIUM FROM REENTERING THE SUITE. THE DEFLECTOR PLATE SHOULD BE THE SAME DIAMETER AS THE RAIN GUARD. IT SHOULD BE SITED AT LEAST TWO PIPE DIAMETERS ABOVE THE ROOF AND TWO DIAMETERS BELOW THE BOTTOM OF THE RAIN GUARD.

N. TO AVOID THE RISK OF INJURY FROM COLD BURNS, ACCESS TO THE QUENCH VENT MUST BE RESTRICTED TO WITHIN 19'–9" OF THE EXTERNAL EXIT.
THE WALLS OF ALL BENDS SHOULD BE SMOOTH AND SHOULD HAVE CENTER LINE RADIUS TO INTERNAL PIPE DIAMETER RATIO OF 1.5 TO 5.0. IF SINGLE–PIECE BENDS ARE NOT READILY AVAILABLE, A BEND MAY BE FABRICATED USING STRAIGHT SECTIONS, HOWEVER, IT MUST COMPRISES A MINIMUM OF 4 SEGMENTS.

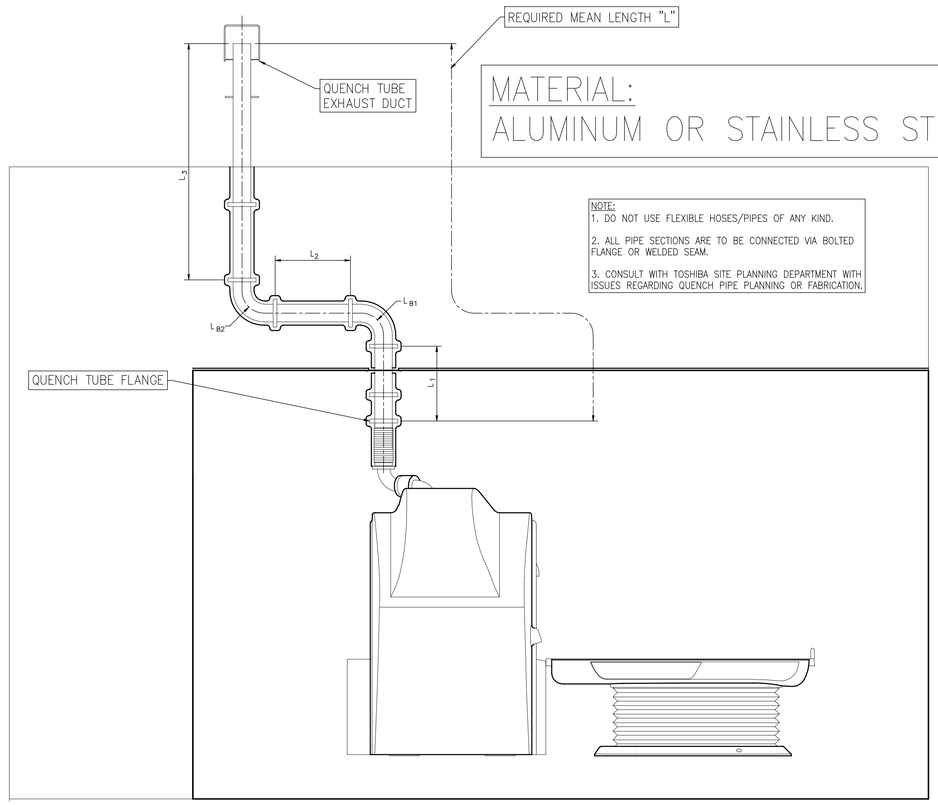
O. MITERED ELBOWS MUST NEVER BE USED.

P. EXPANSIONS FROM A SMALL TO LARGE TUBE DIAMETER ARE ACCOMPLISHED VIA A DIFFUSER.

Q. THERMALLY INSULATING THE QUENCH LINE WILL HELP TO PREVENT COLD BURNS DURING A QUENCH. A PRODUCT SUCH AS ARMAFLEX IS IDEAL.

R. ALL STRAIGHT TUBE SECTIONS SHOULD BE HYDRAULICALLY SMOOTH.

S. IF A LOCALLY PURCHASES DUCT IS USED, USE A STAINLESS STEEL DUCT WITH WELDED JOINTS. BE SURE TO USE FLANGES AT JOINT SECTIONS. A SLIP–ON JOINT MUST NOT BE USED BECAUSE IT MIGHT BE DISCONNECTED WHEN THE PIPE CONTRACTS DUE TO CRYOGENIC TEMPERATURES IN CASE OF QUENCHING. FOR THE PIPING OUTSIDE THE BUILDING, DUCTS WITH WELDED JOINTS MUST BE USED AND THE PIPING MUST BE DESIGNED SO THAT NO GAS LEAKAGE WILL OCCUR.



MATERIAL:
ALUMINUM OR STAINLESS STEEL.

NOTE:
1. DO NOT USE FLEXIBLE HOSES/PIPES OF ANY KIND.
2. ALL PIPE SECTIONS ARE TO BE CONNECTED VIA BOLTED FLANGE OR WELDED SEAM.
3. CONSULT WITH TOSHIBA SITE PLANNING DEPARTMENT WITH ISSUES REGARDING QUENCH PIPE PLANNING OR FABRICATION.

REFER TO TABLES 1 & 2 FOR EFFECTIVE LENGTHS

DEFINITIONS	
L	MEAN LENGTH OF QUENCH TUBE REQUIRED
L_A	APPARENT LENGTH OF QUENCH TUBE REQUIRED
L_S	TOTAL LENGTH OF STRAIGHT SECTIONS IN THE TUBE
L_1.....L_N	STRAIGHT SECTIONS
L_{B1}.....L_{BN}	APPARENT LENGTH PER BEND

FORMULAS
$L_S = L_1 + L_2 + L_3 + L_4 + \ldots L_N$
$L_A = L_S + L_{B1} + L_{B2} + L_{B3} + \ldots L_{BN}$

TABLE 3: DIAMETER AND THICKNESS OF QUENCH PIPE

STAINLESS STEEL			ALUMINUM		
NOMINAL DIAMETER	OUTSIDE DIAMETER	PIPE THICKNESS	NOMINAL DIAMETER	OUTSIDE DIAMETER	PIPE THICKNESS
7 7/8"	8 1/2"	7/64"	7 7/8"	8 1/2"	25/128"
9 27/32"	10 17/32"	17/128"	9 27/32"	10 17/32"	25/128"
11 13/16"	12 69/128"	5/32"	11 13/16"	12 69/128"	25/128"
13 25/32"	14"	5/32"	13 25/32"	14"	15/64"
15 191/256"	16"	45/256"	15 191/256"	16"	15/64"

SIZING PROCEDURE

SIZING PROCEDURE

THE SIZING PROCEDURE FOR THE QUENCH TUBE SHOULD FOLLOW THE STEPS OUTLINED BELOW. PAY PARTICULAR ATTENTION OF THE SPECIAL NOTE IN "6" REGARDING THE USE OF A TUBE COMPRISING OF TWO DIFFERENT DIAMETER PIPES.

1. DETERMINE THE MEAN LENGTH OF TUBE REQUIRED TO REACH FROM THE QUENCH VALVE OUTLET TO THE END OF THE QUENCH TUBE WHERE IT EXITS TO THE ATMOSPHERE. THE MEAN LENGTH REFERS TO THE CENTER LINE LENGTH INCLUSIVE OF ALL BENDS. A NOMINAL CENTER LINE RADIUS FOR BENDS WOULD BE ASSUMED AT THIS STAGE.
2. THE LENGTH OF THE LINE DETERMINED IN NOTE "A" IS TERMED THE "MEAN ABSOLUTE LENGTH (L)." IN TERMS OF THE PRESSURE LOSS ALONG THE TUBE DURING A QUENCH, THE APPARENT LENGTH OF THE TUBE IS LONGER DUE TO THE EXTRA FRICTIONAL LOSSES AROUND THE BENDS. FOR THIS REASON, THE APPARENT LENGTH (L_A) IS CALCULATED AS $L_A = L_S + L_{B1} + L_{B2} + \ldots$ WHERE $L_{B1,B2}$ ARE THE BEND LOSS LENGTHS AND L_S=THE TOTAL LENGTH OF THE STRAIGHT SECTIONS. SELECT THE DIAMETER OF THE TUBE REQUIRED BASED UPON THE MEAN ABSOLUTE LENGTH (L) FROM TABLE 1. TO DETERMINE L_A, ADD ALL BEND LOSS LENGTHS FOR THE CORRESPONDING DIAMETER IN TABLE 2 TO THE SUM OF THE STRAIGHT LINES.
3. IF L_A IS LESS THAN THE PERMITTED LENGTH IN TABLE 1, NO FURTHER ACTION IS NECESSARY AND THE DIAMETER SELECTED MAY BE USED. IF L_A EXCEEDS THE PERMITTED LENGTH, SELECT THE NEXT GREATER PIPE DIAMETER AND REPEAT STEPS 2 AND 3.
4. DETERMINE THE SIZE REQUIRED FOR THE PROTECTIVE RAIN GUARD.
5. DETERMINE THE CORRECT LENGTH FOR A DIFFUSER, IF REQUIRED.
6. IF IT IS NECESSARY TO USE A SMALLER DIAMETER PIPE FOR THE FIRST FEW METERS OF A LONG QUENCH TUBE, THE REMAINING LENGTH OF TUBE MUST BE COMPLETED USING A PIPE WITH A DIAMETER AT LEAST FOUR TIMES THAT OF THE SMALLER PIPE. IN ADDITION, THE TOTAL LENGTH FOR THE QUENCH TUBE MUST NOT EXCEED THE MAXIMUM RECOMMENDED LENGTH FOR THE LARGER TUBE INDICATED IN TABLE 1.

REVISED: 11–29–07

1 RECOMMENDED QUENCH TUBE EXHAUST SPECIFICATIONS (TYPICAL)
SCALE: NOT TO SCALE

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING
(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **AS NOTED**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

M5

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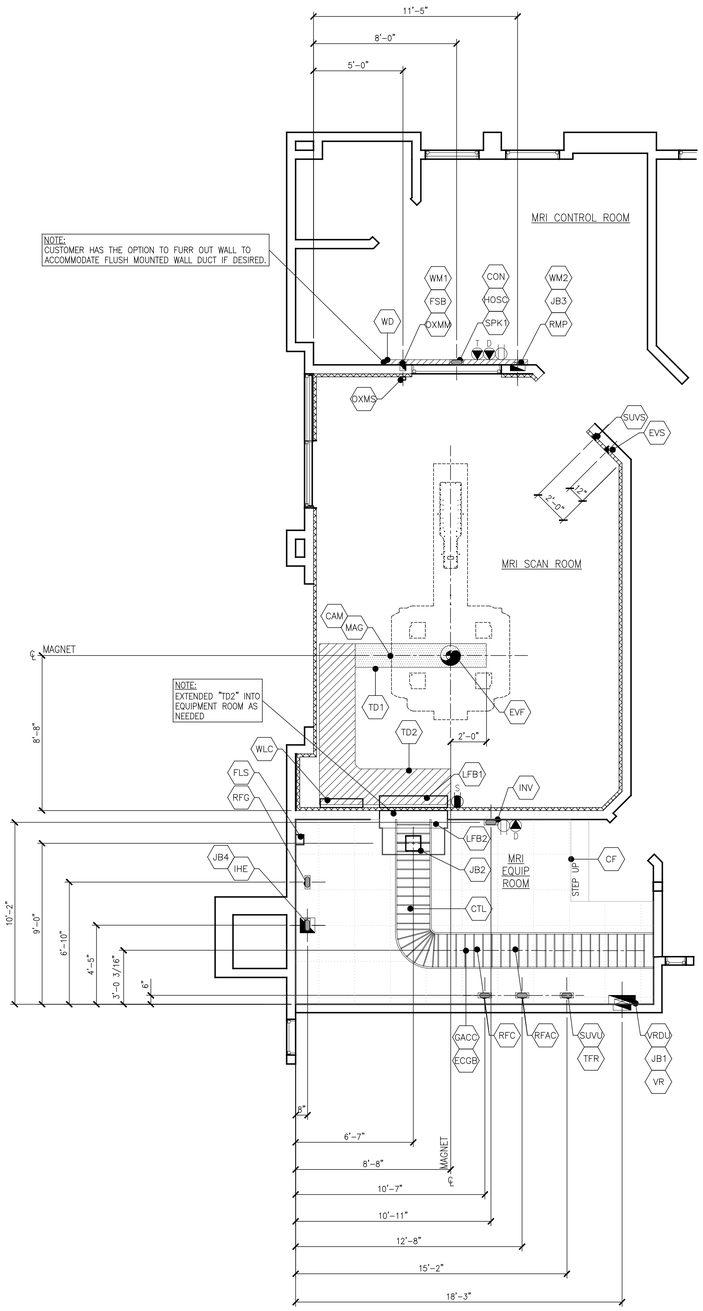
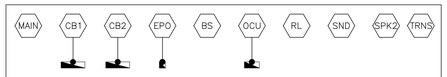


ELECTRICAL LAYOUT



NOTE:
TO BE LOCATED BY CUSTOMER/CONTRACTOR.

ADDITIONAL "EPO" SWITCHES TO BE LOCATED BY CUSTOMER/CONTRACTOR IF NEEDED.

NOTE:
MAKE SURE TO ADD THE "EPO" SWITCHES TO ALL ROOMS IF A MAIN "EPO" IS NOT IN THE ROOM.

NOTE:
J-BOX SIZES MAY BE INCREASED AS NEEDED WITH EXCEPTION TO THE "VRDU" J-BOX.

NOTE:
GROMMETED OPENINGS ARE SHOWN FOR REFERENCE PURPOSES ONLY. VERIFY SIZE AND LOCATION WITH TOSHIBA REPRESENTATIVE.

ELECTRICAL DUCT LEGEND

ITEM	ITEM DESCRIPTION SUPPLIED / INSTALLED BY CUSTOMER / CONTRACTOR	REF.
WD	10" W X 3 1/2" D, FLUSH/SURFACE MOUNTED WALL DUCT W/(3) EQUALLY PARTITIONED COMPARTMENTS THROUGHOUT & REMOVABLE ACCESS COVERS. MOUNTED 12" A.F.F. TO BOTTOM OF DUCT.	2 / E5
VR	10" W X 3 1/2" D, SURFACE MOUNTED RISER DUCT W/(3) EQUALLY PARTITIONED COMPARTMENTS THROUGHOUT & REMOVABLE ACCESS COVERS. FROM "PCDU" TO BELOW COMPUTER FLOORING.	1 / E5
CTL	18" W X 4" H, CABLE TRAY LADDER. LOCATION TO BE DETERMINED. WORKING LOAD OF CABLE TRAY LADDER IS 100 LBS/LINEAR FOOT.	3 / E3
TD1	16" W X 8" D ALUMINUM DUCT, FLUSH MOUNTED (W/ COVERS) IN FINISHED FLOOR. (3) EQUALLY PARTITIONED COMPARTMENTS & REMOVABLE ACCESS ALUMINUM COVERS (THICKNESS SHOULD BE ABLE TO SUPPORT MIN. OF 200 LBS.) ARE REQUIRED.	5 / E5
TD2	24" W X 8" D ALUMINUM DUCT, FLUSH MOUNTED (W/ COVERS) IN FINISHED FLOOR. (3) EQUALLY PARTITIONED COMPARTMENTS & REMOVABLE ACCESS ALUMINUM COVERS (THICKNESS SHOULD BE ABLE TO SUPPORT MIN. OF 200 LBS.) ARE REQUIRED.	5 / E5
WM1	G-3000 (2 3/4" X 1 17/32") WIREMOLD, SURFACE MOUNTED ON WALL CONNECTED TO WALL DUCT "WD".	
WM2	G-3000 (2 3/4" X 1 17/32") WIREMOLD, SURFACE MOUNTED ON WALL CONNECTING WALL DUCT "WD" TO "RMP".	
CF	24" W X 24" L COMPUTER FLOOR. 12" RAISED FLOOR MUST BE CAPABLE OF SUPPORTING ALL TOSHIBA EQUIPMENT. ALL CUT OUTS BY ELECTRICAL CONTRACTOR.	

ELECTRICAL LEGEND

ITEM	ITEM DESCRIPTION SUPPLIED / INSTALLED BY CUSTOMER / CONTRACTOR	REF.
MAIN	MAIN SERVICE ENTRANCE PANEL	1 / E4
CB1	THREE PHASE CIRCUIT BREAKER PER TOSHIBA POWER SPECIFICATIONS (SEE DETAIL) CIRCUIT BREAKER LOCATION PER CODE REQUIREMENTS BY ELECTRICAL CONTRACTOR.	2 / E4
CB2	CUSTOMER/CONTRACTOR PROVIDED CIRCUIT BREAKER FOR ROOM LIGHTS, CIRCUIT BREAKER LOCATION TO BE DETERMINED BY ELECTRICAL CONTRACTOR.	
VRDU	18" W X 10" H X 6" D J-BOX, SURFACE MOUNTED 45 1/2" A.C.F. TO BOTTOM OF BOX. OPEN TO "VR".	
TRNS	STEP UP TRANSFORMER. EXACT SIZE OF J-BOX T.B.D.	
EPO	4" STD. J-BOX FOR REMOTE OFF SWITCH. LOCATED BY CUSTOMER/CONTRACTOR. DPDT, NORMALLY OPEN MUSHROOM HEAD PUSH BUTTON.	1 / E4
BS	BUILDING STEEL.	1 / E4
MAG	OPENING ON ALUMINUM FLOOR DUCT.	5 / E5
CON, HOSC, SPK1	SHARED GROMMETED OPENING IN "WD".	2 / E5
OXMM	WIRE CONNECTION THROUGH RF SHIELD FOR OXYGEN MONITOR IN CONTROL ROOM @ +5'-0" A.F.F. TO CENTER.	1 / E3
OXMS	WIRE CONNECTION THROUGH RF SHIELD FOR OXYGEN SENSOR IN SCAN ROOM, (COPPER OR ALUMINUM) @ JUST BELOW FINISHED CEILING. A WAVE GUIDE IS REQUIRED, TO BE SUPPLIED BY RF VENDOR.	1 / E3
SUVS	4" W X 4" D X 4" H J-BOX FOR EMERGENCY RUN DOWN UNIT IN SCAN ROOM (PLASTIC OR ALUMINUM). FLUSH IN THE WALL AT +6'-0" A.F.F. TO CENTER OF BOX. ADJACENT TO SCAN ROOM DOOR.	
SUVU	MOUNTED ON TOP OF "TFR".	
EVS	4" W X 4" H X 4" D J-BOX FOR EMERGENCY VENTILATION FAN SWITCH @ 4'-0" A.F.F. TO BOTTOM OF BOX.	
EVF	SCAN ROOM EMERGENCY VENTILATION FAN (FIELD VERIFY LOCATION).	
FSB	4" W X 4" H X 4" D J-BOX FOR FAN SWITCH BOX IN CONTROL ROOM (FIELD VERIFY LOCATION).	
CAM	PATIENT MONITOR CAMERA ON THE MAGNET.	
WLC	WALL CABINET SUPPLIED AND INSTALLED BY TOSHIBA (SHOWN FOR LOCATION ONLY).	5-7 / M3
LFB1	LINE FILTER BOX SUPPLIED AND INSTALLED BY TOSHIBA (SCAN ROOM SIDE).	1-4 / M3
LFB2	LINE FILTER BOX SUPPLIED AND INSTALLED BY TOSHIBA (EQUIPMENT ROOM SIDE).	1-4 / M3
FLS	FLOW SWITCH SUPPLIED BY TOSHIBA AND INSTALLED BY CUSTOMER/CONTRACTOR.	1 / P2
TFR	GROMMETED OPENING W/NON-CHAFING MATERIAL IN RAISED COMPUTER FLOOR TILE.	
RFG	GROMMETED OPENING W/NON-CHAFING MATERIAL IN RAISED COMPUTER FLOOR TILE.	
GACC	CABLES WILL DRAPE FROM THE CABLE TRAY LADDER "CTL" TO THE TOP OF CABINET.	2 / E3
ECGB	MOUNTED ON TOP OF "GACC".	
RFC	GROMMETED OPENING W/NON-CHAFING MATERIAL IN RAISED COMPUTER FLOOR TILE. SOME CABLES WILL DRAPE FROM CABLE TRAY LADDER "CTL" TO TOP OF CABINET.	2 / E3
RFAC	GROMMETED OPENING W/NON-CHAFING MATERIAL IN RAISED COMPUTER FLOOR TILE. SOME CABLES WILL DRAPE FROM CABLE TRAY LADDER "CTL" TO TOP OF CABINET.	2 / E3
IHE	GROMMETED OPENING W/NON-CHAFING MATERIAL IN RAISED COMPUTER FLOOR TILE.	
OCU	10" W X 10" H X 4" D, J-BOX FOR OUTDOOR CHILLER UNIT.	
RMP	GROMMETED OPENING AT END OF "WM2". HEIGHT TO BE DETERMINED.	
INV	GROMMETED OPENING W/NON-CHAFING MATERIAL IN RAISED COMPUTER FLOOR TILE.	
JB1	10" W X 10" H X 4" D, J-BOX FLUSH W/FINISHED WALL, MOUNTED 45 1/2" A.C.F. TO BOTTOM OF BOX. OPEN TO "VRDU".	1 / E5
JB2	10" W X 10" L X 4" H, J-BOX FLUSH MOUNTED IN FINISHED CEILING.	
JB3	10" W X 10" H X 4" D, J-BOX FLUSH W/FINISHED WALL, MOUNTED 12" A.F.F. TO BOTTOM OF BOX. OPEN TO "WD".	3 / E5
JB4	10" W X 10" L X 4" H, J-BOX SURFACE MOUNTED UNDER COMPUTER FLOORING TO FINISHED SLAB.	
RL	ROOM LIGHTING (BY CUSTOMER/CONTRACTOR).	
SPK2	SCAN ROOM SPEAKER.	
SND	SOUND SYSTEM (OPTIONAL).	
	ELECTRICAL OUTLETS.	
D	RJ45 CONNECTOR, CAT5 CABLE TO BE USED FOR DATA CONNECTION FOR NETWORKING.	
T	DEDICATED PHONE LINE SUPPLIED/INSTALLED BY CUSTOMER/CONTRACTOR.	
S	CUSTOMER/CONTRACTOR PROVIDED SERVICE ELECTRICAL OUTLETS THAT CONNECTS TO "LFB1".	1 / E4

NOTE: ALL MATERIAL IN SCAN ROOM MUST BE NON FERROUS.

REVISED: 04-19-07

SCAN ROOM EMERGENCY LIGHTS

IF RECHARGEABLE BATTERY LIGHTS ARE TO BE USED IN THE SCAN ROOM, THE CHARGING UNIT MUST BE LOCATED OUTSIDE OF THE RF ROOM. THE CHARGING LEADS MUST BE ROUTED INTO THE RF ROOM VIA APPROPRIATE POWER FILTERS TO THE LIGHT AND THE BATTERY.

REVISED: 12-08-05

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

(MRI SCAN ROOM – VANTAGE/TITAN)

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DATE: **01-07-08**

SCALE: **1/4" = 1'-0"**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

E1

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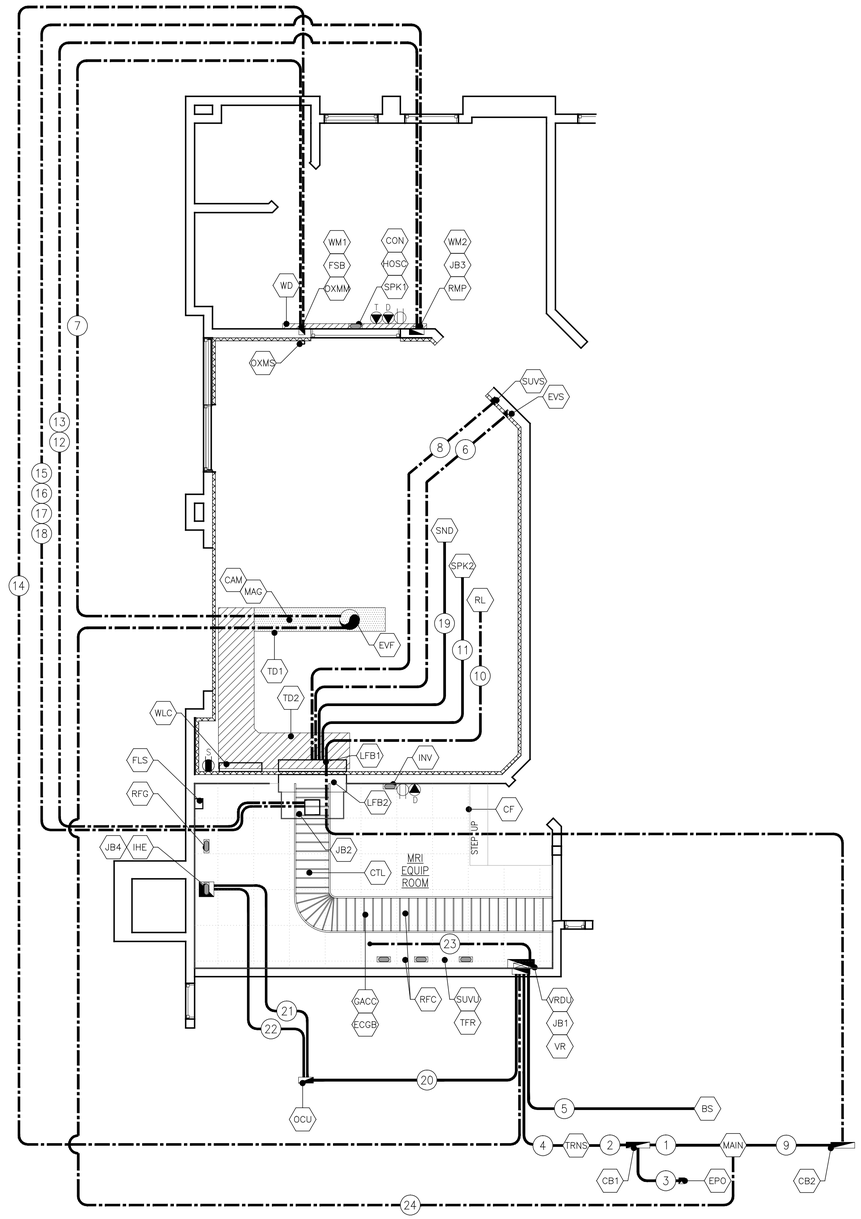

ELECTRICAL SCHEMATIC

CONDUIT KEY	
	UNDER FLOOR
	OVER CEILING
	NOT CRITICAL

NOTE:
CONDUIT SCHEMATIC IS SHOWN FOR REFERENCE PURPOSES ONLY.

NOTE:
1. ALL GROUND WIRES NEED TO BE INSULATED/ISOLATED.
2. CONTRACTOR TO PROVIDE PULL STRINGS IN EACH CONDUIT.

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CONDUIT SCHEDULE

NOTE: ALL MATERIAL IN SCAN ROOM MUST BE NON FERROUS.
NOTE: ALL CONDUIT RUNS MUST TAKE THE SHORTEST MOST DIRECT ROUTE POSSIBLE.

REVISED: 05-01-06

RUN (NUMBER)	CONDUIT (POINT TO POINT)		CONDUIT (DIAMETER/IN.)	CABLE (POINT TO POINT)		CABLE LENGTH (MAX. USABLE)	CABLES (SUPPLIED BY)
1	MAIN	CB1	SEE DETAIL 2/E4	MAIN	CB1	SEE DETAIL 2/E4	CONTRACTOR
2	CB1	TRNS	SEE DETAIL 2/E4	CB1	TRNS	SEE DETAIL 2/E4	CONTRACTOR
3	CB1	EPO	SEE DETAIL 2/E4	CB1	EPO	SEE DETAIL 2/E4	CONTRACTOR
4	TRNS	JB1	SEE DETAIL 2/E4	TRNS	VRDU	SEE DETAIL 2/E4	CONTRACTOR
5	JB1	BS	PER CODE	VRDU	BS	PER CODE	CONTRACTOR
6	LFB1	EVS	1"	LFB1	EVS	AS REQ'D	CONTRACTOR (IN RF SHIELD)
7	FSB	EVF	1"	FSB	EVF	32'-0"	TOSHIBA (THRU RELAY BOX)
8	LFB1	SUVS	1"	LFB1	SUVS	49'-2 1/2"*	TOSHIBA (IN RF SHIELD)
9	MAIN	CB2	PER CODE	MAIN	CB2	PER CODE	CONTRACTOR
10	CB2	RL	*	CB2	RL	AS REQ'D	CONTRACTOR (IN RF SHIELD)
11	LFB1	SPK2	1/2"	LFB1	SPK2	65'-0"	TOSHIBA (IN RF SHIELD)
12	JB2	JB3	3" (COMBINED)	TFR	CON	65'-0"	TOSHIBA
13	JB2	JB3		GACC	HOSC	65'-0"	TOSHIBA (POWER CABLE)
14	JB1	FSB	PER CODE	VRDU	FSB	32'-0"	TOSHIBA (POWER CABLE) (MAY COMBINE WITH #11&12)
15	JB2	JB3	3" (COMBINED)	GACC	CON	65'-0"	TOSHIBA
16	JB2	JB3		GACC	HOSC	65'-0"	TOSHIBA (SIGNAL CABLE)
17	JB2	JB3		LFB2	CON	65'-0"	TOSHIBA
18	JB2	JB3		OCU	RMP	PER MFG.	CONTRACTOR (VIA #21)
19	LFB1	SND	1/2"	LFB1	SND	PER MFG.	CONTRACTOR
20	JB1	OCU	PER CODE	VRDU	OCU	PER CODE	CONTRACTOR
21	OCU	JB4	3/4"	OCU	IHE	PER SITE	CONTRACTOR (POWER CABLE)
22	OCU	JB4	3/4"	OCU	IHE	PER SITE	CONTRACTOR (SIGNAL CABLE)
23	VRDU	GACC	2 1/2"	VRDU	GACC	32'-0"	TOSHIBA
24	MAIN	EVF	PER MFG.	MAIN	EVF	PER MFG.	CONTRACTOR

CONDUITS SUPPLIED / INSTALLED BY CUSTOMER / CONTRACTOR

REVISED: 04-19-07

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

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DATE: **01-07-08**

SCALE: **1/4" = 1'-0"**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

E2

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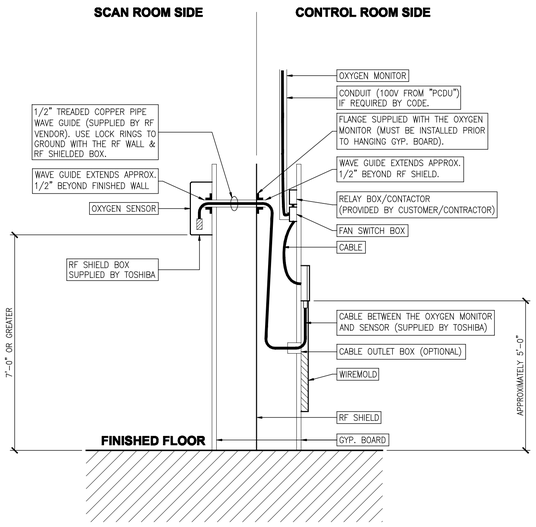
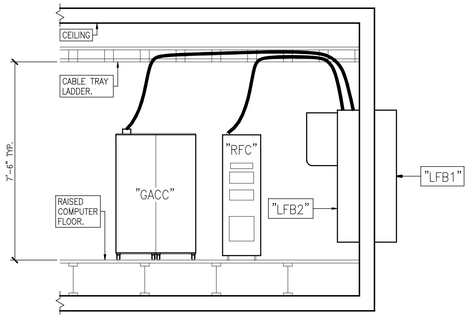

SCAN ROOM SIDE
CONTROL ROOM SIDE
OXYGEN MONITOR
CONDUIT (100V FROM "PCDU") IF REQUIRED BY CODE.
1/2" TREADED COPPER PIPE WAVE GUIDE (SUPPLIED BY RF VENDOR). USE LOCK RINGS TO GROUND WITH THE RF WALL & RF SHIELDED BOX.
FLANGE SUPPLIED WITH THE OXYGEN MONITOR (MUST BE INSTALLED PRIOR TO HANGING GYP. BOARD).
WAVE GUIDE EXTENDS APPROX. 1/2" BEYOND RF SHIELD.
WAVE GUIDE EXTENDS APPROX. 1/2" BEYOND FINISHED WALL
RELAY BOX/CONTACTOR (PROVIDED BY CUSTOMER/CONTRACTOR)
OXYGEN SENSOR
FAN SWITCH BOX
CABLE
RF SHIELD BOX SUPPLIED BY TOSHIBA
CABLE BETWEEN THE OXYGEN MONITOR AND SENSOR (SUPPLIED BY TOSHIBA)
CABLE OUTLET BOX (OPTIONAL)
WIREMOLD
7'-0" OR GREATER
APPROXIMATELY 5'-0"
RF SHIELD
GYP. BOARD
FINISHED FLOOR

NOTE:
PASS THE COPPER TUBE WAVE GUIDE PREPARED BY THE RF VENDOR BETWEEN THE FLANGES SUPPLIED WITH THE OXYGEN MONITOR. CONNECT THE COPPER TUBE (WAVE GUIDE), AND RF SHIELD BOX USING TREADED WAVE GUIDE & LOCK RINGS. THIS IS REQUIRED FOR PROPER GROUNDING.

REVISED: 12-08-05

1 CONNECTION OF "OXMM" & "OXMS"

SCALE: NOT TO SCALE



GRADIENT POWER SUPPLY AND CONTROL CABINET ("GACC")
RF CABINET ("RFC")
LINE FILTER BOX – SCAN ROOM SIDE ("LFB1")
LINE FILTER BOX – EQUIPMENT ROOM SIDE ("LFB2")
CABLE TRAY LADDER ("CTL")

REVISED: 02-01-07

2 TYPICAL CABLE LADDER ELEVATION

SCALE: NOT TO SCALE

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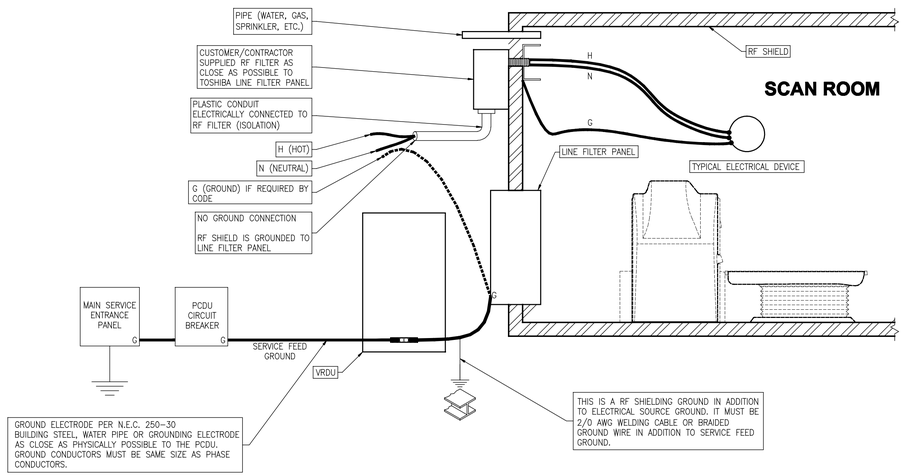
PIPE (WATER, GAS, SPRINKLER, ETC.)
CUSTOMER/CONTRACTOR SUPPLIED RF FILTER AS CLOSE AS POSSIBLE TO TOSHIBA LINE FILTER PANEL
PLASTIC CONDUIT ELECTRICALLY CONNECTED TO RF FILTER (ISOLATION)
H (HOT)
N (NEUTRAL)
G (GROUND) IF REQUIRED BY CODE
NO GROUND CONNECTION
RF SHIELD IS GROUNDED TO LINE FILTER PANEL
RF SHIELD
SCAN ROOM
H
N
G
LINE FILTER PANEL
TYPICAL ELECTRICAL DEVICE
MAIN SERVICE ENTRANCE PANEL
PCDU CIRCUIT BREAKER
SERVICE FEED GROUND
VRDU
GROUND ELECTRODE PER N.E.C. 250-30
BUILDING STEEL, WATER PIPE OR GROUNDING ELECTRODE AS CLOSE AS PHYSICALLY POSSIBLE TO THE PCDU.
GROUND CONDUCTORS MUST BE SAME SIZE AS PHASE CONDUCTORS.
THIS IS A RF SHIELDING GROUND IN ADDITION TO ELECTRICAL SOURCE GROUND. IT MUST BE 2/0 AWG WELDING CABLE OR BRAIDED GROUND WIRE IN ADDITION TO SERVICE FEED GROUND.

REVISED: 12-19-07

4 SCAN ROOM GROUNDING TYPICAL DETAIL

SCALE: NOT TO SCALE

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REV.	DATE	DESCRIPTION	INT.

TYPICAL DRAWING

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DATE: **01-07-08**

SCALE: **1/4" = 1'-0"**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

E3

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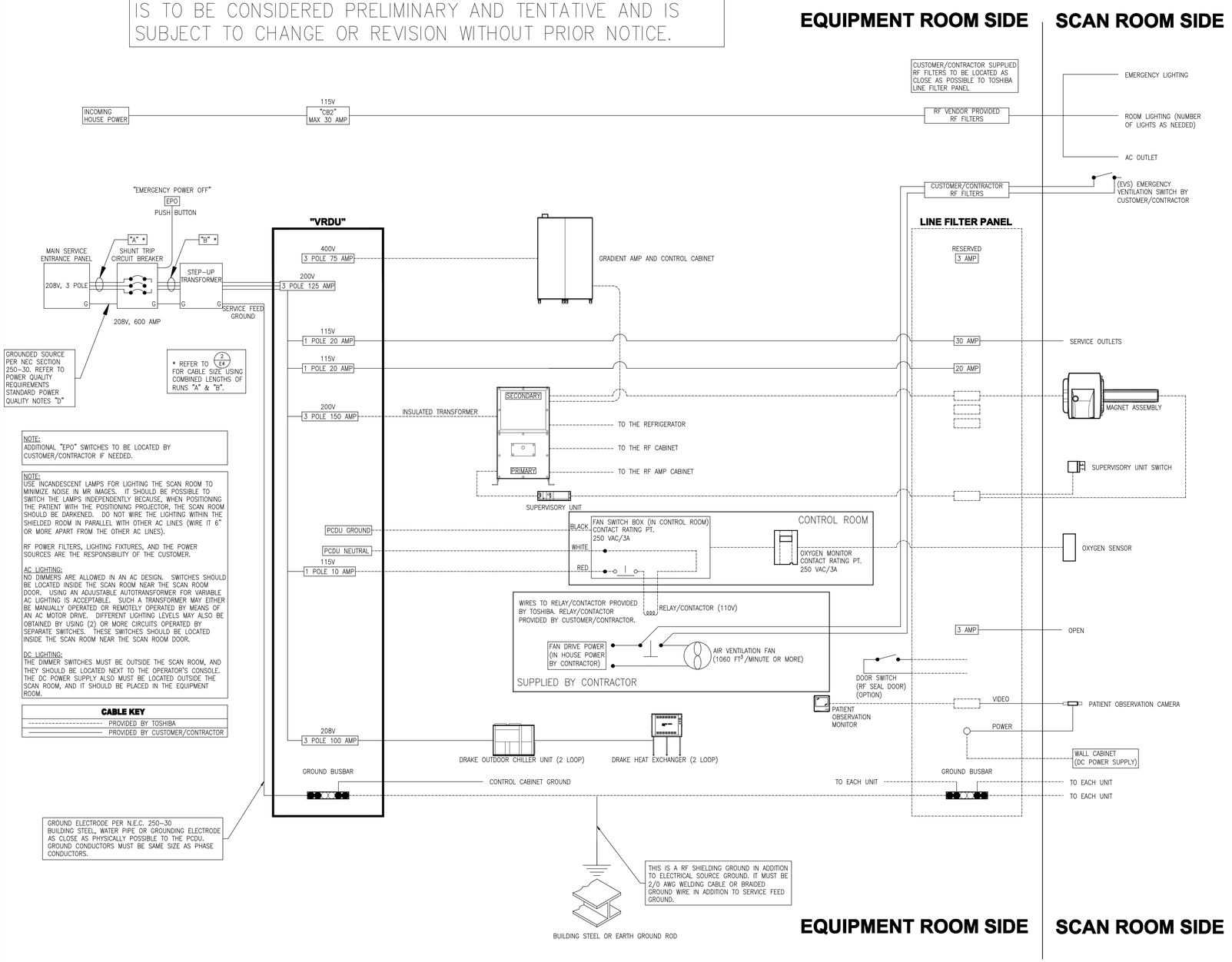

EQUIPMENT ROOM SIDE
SCAN ROOM SIDE
INCOMING HOUSE POWER
115V "CB2" MAX 30 AMP
"EMERGENCY POWER OFF" EPO PUSH BUTTON
MAIN SERVICE ENTRANCE PANEL
208V, 3 POLE
208V, 600 AMP
SHUNT TRIP CIRCUIT BREAKER
"A" *
"B" *
STEP-UP TRANSFORMER
SERVICE FEED GROUND
GROUNDED SOURCE PER NEC SECTION 250-30. REFER TO POWER QUALITY REQUIREMENTS STANDARD POWER QUALITY NOTES "D"
* REFER TO E4 FOR CABLE SIZE USING COMBINED LENGTHS OF RUNS "A" & "B".
"VRDU"
400V 3 POLE 75 AMP
200V 3 POLE 125 AMP
115V 1 POLE 20 AMP
115V 1 POLE 20 AMP
200V 3 POLE 150 AMP
PCDU GROUND
PCDU NEUTRAL
115V 1 POLE 10 AMP
208V 3 POLE 100 AMP
GROUND BUSBAR
CONTROL CABINET GROUND
GRADIENT AMP AND CONTROL CABINET
INSULATED TRANSFORMER
SECONDARY
PRIMARY
SUPERVISORY UNIT
TO THE REFRIGERATOR
TO THE RF CABINET
TO THE RF AMP CABINET
FAN SWITCH BOX (IN CONTROL ROOM) CONTACT RATING PT. 250 VAC/3A
BLACK
WHITE
RED
CONTROL ROOM
OXYGEN MONITOR CONTACT RATING PT. 250 VAC/3A
WIRES TO RELAY/CONTACTOR PROVIDED BY TOSHIBA. RELAY/CONTACTOR PROVIDED BY CUSTOMER/CONTRACTOR.
RELAY/CONTACTOR (110V)
FAN DRIVE POWER (IN HOUSE POWER BY CONTRACTOR)
AIR VENTILATION FAN (1060 FT³/MINUTE OR MORE)
SUPPLIED BY CONTRACTOR
DRAKE OUTDOOR CHILLER UNIT (2 LOOP)
DRAKE HEAT EXCHANGER (2 LOOP)
GROUND ELECTRODE PER N.E.C. 250-30 BUILDING STEEL, WATER PIPE OR GROUNDING ELECTRODE AS CLOSE AS PHYSICALLY POSSIBLE TO THE PCDU. GROUND CONDUCTORS MUST BE SAME SIZE AS PHASE CONDUCTORS.
THIS IS A RF SHIELDING GROUND IN ADDITION TO ELECTRICAL SOURCE GROUND. IT MUST BE 2/0 AWG WELDING CABLE OR BRAIDED GROUND WIRE IN ADDITION TO SERVICE FEED GROUND.
BUILDING STEEL OR EARTH GROUND ROD
CUSTOMER/CONTRACTOR SUPPLIED RF FILTERS TO BE LOCATED AS CLOSE AS POSSIBLE TO TOSHIBA LINE FILTER PANEL
RF VENDOR PROVIDED RF FILTERS
CUSTOMER/CONTRACTOR RF FILTERS
LINE FILTER PANEL
RESERVED 3 AMP
30 AMP
20 AMP
3 AMP
DOOR SWITCH (RF SEAL DOOR) (OPTION)
PATIENT OBSERVATION MONITOR
VIDEO
POWER
GROUND BUSBAR
TO EACH UNIT
TO EACH UNIT
EMERGENCY LIGHTING
ROOM LIGHTING (NUMBER OF LIGHTS AS NEEDED)
AC OUTLET
(EVS) EMERGENCY VENTILATION SWITCH BY CUSTOMER/CONTRACTOR
SERVICE OUTLETS
MAGNET ASSEMBLY
SUPERVISORY UNIT SWITCH
OXYGEN SENSOR
OPEN
PATIENT OBSERVATION CAMERA
WALL CABINET (DC POWER SUPPLY)
EQUIPMENT ROOM SIDE
SCAN ROOM SIDE

NOTE:
ADDITIONAL "EPO" SWITCHES TO BE LOCATED BY CUSTOMER/CONTRACTOR IF NEEDED.

NOTE:
USE INCANDESCENT LAMPS FOR LIGHTING THE SCAN ROOM TO MINIMIZE NOISE IN MR IMAGES. IT SHOULD BE POSSIBLE TO SWITCH THE LAMPS INDEPENDENTLY BECAUSE, WHEN POSITIONING THE PATIENT WITH THE POSITIONING PROJECTOR, THE SCAN ROOM SHOULD BE DARKENED. DO NOT WIRE THE LIGHTING WITHIN THE SHIELDED ROOM IN PARALLEL WITH OTHER AC LINES (WIRE IT 6" OR MORE APART FROM THE OTHER AC LINES).

RF POWER FILTERS, LIGHTING FIXTURES, AND THE POWER SOURCES ARE THE RESPONSIBILITY OF THE CUSTOMER.

AC LIGHTING:
NO DIMMERS ARE ALLOWED IN AN AC DESIGN. SWITCHES SHOULD BE LOCATED INSIDE THE SCAN ROOM NEAR THE SCAN ROOM DOOR. USING AN ADJUSTABLE AUTOTRANSFORMER FOR VARIABLE AC LIGHTING IS ACCEPTABLE. SUCH A TRANSFORMER MAY EITHER BE MANUALLY OPERATED OR REMOTELY OPERATED BY MEANS OF AN AC MOTOR DRIVE. DIFFERENT LIGHTING LEVELS MAY ALSO BE OBTAINED BY USING (2) OR MORE CIRCUITS OPERATED BY SEPARATE SWITCHES. THESE SWITCHES SHOULD BE LOCATED INSIDE THE SCAN ROOM NEAR THE SCAN ROOM DOOR.

DC LIGHTING:
THE DIMMER SWITCHES MUST BE OUTSIDE THE SCAN ROOM, AND THEY SHOULD BE LOCATED NEXT TO THE OPERATOR'S CONSOLE. THE DC POWER SUPPLY ALSO MUST BE LOCATED OUTSIDE THE SCAN ROOM, AND IT SHOULD BE PLACED IN THE EQUIPMENT ROOM.

CABLE KEY

----------	PROVIDED BY TOSHIBA
————	PROVIDED BY CUSTOMER/CONTRACTOR

REVISED: 09-11-07

1 POWER SYSTEM DIAGRAM

POWER QUALITY REQUIREMENTS
TITAN SCANNER WITH STEP-UP TRANSFORNER & VRDU

SUPPLY CONFIGURATION:	3 PHASE, 3 WIRE POWER, AND GROUND DELTA OR WYE
NOMINAL LINE VOLTAGE:	208V
LINE VOLTAGE VARIATION:	±10% STEADY-STATE INCLUDING SAGS AND SURGES
LINE VOLTAGE BALANCE:	2% MAXIMUM OF NOMINAL VOLTAGE BETWEEN PHASES
FREQUENCY VARIATION:	±1 Hz
HARMONIC DISTORTION:	3% STEADY STATE, 5% FOR SHORT PERIODS (1 MINUTE OR LESS)
GROUND CONDUCTOR IMPEDANCE:	0.1 Ohms @ 60Hz, TO NEUTRAL-GROUND BONDING POINT (SEE NOTE D)
MAXIMUM SYSTEM DEMAND:	120KVA (IMAGING)

RECOMMENDED CONDUCTOR SIZES (HOUSE MAIN POWER TO TRANSFORMER)
(SEE NOTE E)
FOR 1.5% IMPEDANCE OF BRANCH CONDUCTORS (20°C)

CONDUCTOR SIZE	208V (SEE NOTE B)
500 MCM	--.--
2 X 400 MCM	189 FT.
2 X 500 MCM	236 FT.
CIRCUIT BREAKER SIZE: (SEE NOTE F)	600 A
MOMENTARY MAXIMUM CURRENT:	388.60 A
MAXIMUM PH-PH IMPEDANCE:	0.005 Ohms
MAXIMUM VOLTAGE DROP:	7.9V

RECOMMENDED CONDUCTOR SIZES (TRANSFORMER TO VRDU)
(SEE NOTE E)
FOR 1.5% IMPEDANCE OF BRANCH CONDUCTORS (20°C)

CONDUCTOR SIZE	208V (SEE NOTE B)
4/0 AWG	266 FT.
250 MCM	312 FT.
300 MCM	374 FT.
350 MCM	437 FT.
400 MCM	504 FT.
500 MCM	629 FT.
600 MCM	748 FT.
700 MCM	882 FT.
CIRCUIT BREAKER SIZE: (SEE NOTE F)	225 A
MOMENTARY MAXIMUM CURRENT:	168.39 A
MAXIMUM PH-PH IMPEDANCE:	0.029 Ohms
MAXIMUM VOLTAGE DROP:	18.2V

STANDARD POWER QUALITY NOTES

A. A GROUNDED NEUTRAL POWER SOURCE IS REQUIRED TO ASSURE RELIABLE EQUIPMENT OPERATION. THE NEUTRAL CONDUCTOR MAY NOT BE USED FOR A PARTICULAR SYSTEM. FLOATING OR DELTA SOURCES ARE NOT ACCEPTABLE.

B. IN CASES WHERE MULTIPLE VOLTAGES ARE PERMITTED, THE PREFERRED SYSTEM VOLTAGE IS SPECIFIED.

C. DUE TO THE HIGH INSTANTANEOUS POWER OF MEDICAL IMAGING SYSTEMS, USE THE HIGHEST AVAILABLE VOLTAGE SOURCE. ENSURE THAT LOWER VOLTAGE SOURCES ARE DERIVED DIRECTLY FROM THE SERVICE ENTRANCE OF THE FACILITY.

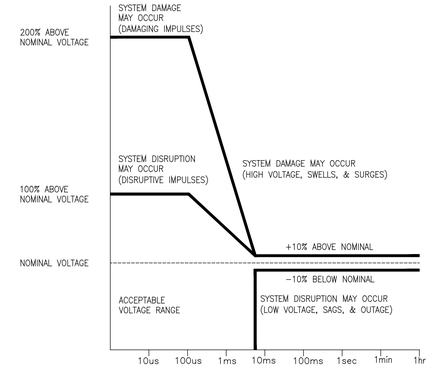
D. GROUND CONDUCTORS MUST BE THE SAME SIZE AS THE PHASE CONDUCTORS UNLESS OTHERWISE STATED.

E. ALL FEEDER AND BRANCH CIRCUIT CONDUCTORS MUST BE COPPER – ALUMINUM IS NOT PERMITTED.

F. IF THE EQUIPMENT CIRCUIT BREAKER IS NOT LOCATED IN THE CONTROL AREA, A SHUNT TRIP BREAKER MUST BE USED IN ORDER TO COMPLY WITH N.E.C. 517-72(b). A PUSH-BUTTON TO OPERATE THE SHUNT TRIP MUST BE LOCATED IN THE CONTROL AREA.

G. A SEPARATE CIRCUIT, FED FROM THE FACILITY RADIOLOGY PANEL OR A MAIN SERVICE PANEL IS REQUIRED. USE OF A SUB PANEL WITH LOADS SUCH AS ELEVATORS, HVAC, MOTORS, ETC., IS NOT PERMITTED.

H. DEVICES SUCH AS UNINTERRUPTIBLE POWER SUPPLIES, POWER CONDITIONERS, VOLTAGE REGULATORS, AND FILTERS MAY BE INCOMPATIBLE WITH THIS IMAGING EQUIPMENT. CONSULT YOUR TOSHIBA SERVICE REPRESENTATIVE PRIOR TO PURCHASING OR INSTALLING THESE DEVICES.


SYSTEM DAMAGE MAY OCCUR (DAMAGING IMPULSES)
200% ABOVE NOMINAL VOLTAGE
SYSTEM DISRUPTION MAY OCCUR (DISRUPTIVE IMPULSES)
SYSTEM DAMAGE MAY OCCUR (HIGH VOLTAGE, SWELLS, & SURGES)
100% ABOVE NOMINAL VOLTAGE
+10% ABOVE NOMINAL
NOMINAL VOLTAGE
-10% BELOW NOMINAL
ACCEPTABLE VOLTAGE RANGE
SYSTEM DISRUPTION MAY OCCUR (LOW VOLTAGE, SAGS, & OUTAGE)
10us 100us 1ms 10ms 100ms 1sec 1min 1hr

REVISED: 3-24-2004

2 POWER REQUIREMENTS WITH PCDU

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REV.	DATE	DESCRIPTION
INT.		

TYPICAL DRAWING
(MRI SCAN ROOM – VANTAGE/TITAN)

THESE TOSHIBA PLANS ARE FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN THAT AGREED UPON BETWEEN TOSHIBA AND THE CUSTOMER. THESE SITE PLANS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES.

DATE: **01-07-08**
SCALE: **AS NOTED**
DRAWN: **G.S.P.**
QUOTE: N/A
PROJECT NO. **TYPICALS**

E4

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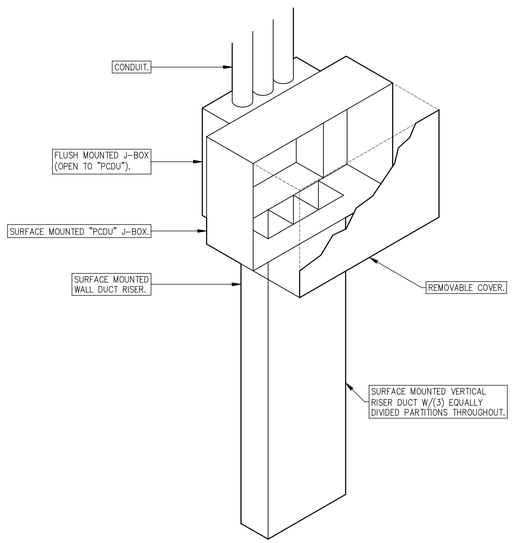
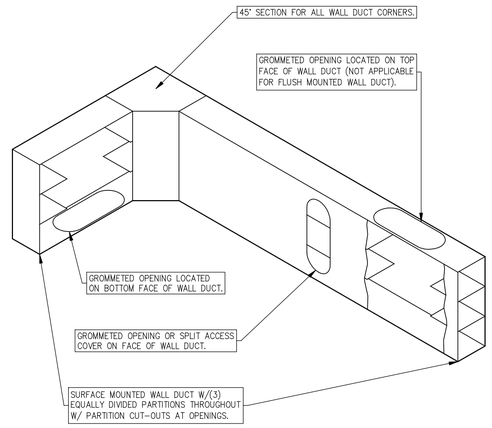

CONDUIT.
FLUSH MOUNTED J-BOX (OPEN TO "PCDU").
SURFACE MOUNTED "PCDU" J-BOX.
SURFACE MOUNTED WALL DUCT RISER.
REMOVABLE COVER.
SURFACE MOUNTED VERTICAL RISER DUCT W/(3) EQUALLY DIVIDED PARTITIONS THROUGHOUT.

1 TYPICAL PCDU J-BOX W/ CONDUIT J-BOX

SCALE: NOT TO SCALE

REVISED: 11-30-06

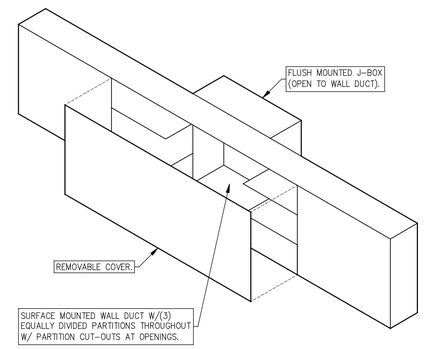

45° SECTION FOR ALL WALL DUCT CORNERS.
GROMMETED OPENING LOCATED ON TOP FACE OF WALL DUCT (NOT APPLICABLE FOR FLUSH MOUNTED WALL DUCT).
GROMMETED OPENING LOCATED ON BOTTOM FACE OF WALL DUCT.
GROMMETED OPENING OR SPLIT ACCESS COVER ON FACE OF WALL DUCT.
SURFACE MOUNTED WALL DUCT W/(3) EQUALLY DIVIDED PARTITIONS THROUGHOUT W/ PARTITION CUT-OUTS AT OPENINGS.

NOTE:
CUSTOMER'S CONTRACTOR TO VERIFY LOCATION OF J-BOX(ES) FOR CABLE PULL TO WALL DUCT.
CUSTOMER'S CONTRACTOR TO VERIFY LOCATION OF GROMMETED OPENINGS IN WALL DUCT W/ TOSHIBA REP.

2 TYPICAL WALL DUCT

SCALE: NOT TO SCALE

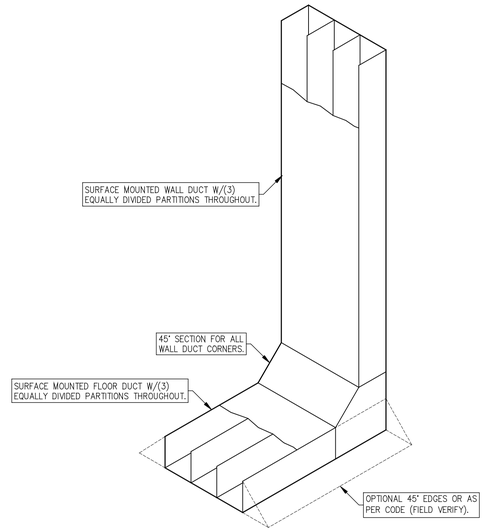
REVISED: 11-30-06


FLUSH MOUNTED J-BOX (OPEN TO WALL DUCT).
REMOVABLE COVER.
SURFACE MOUNTED WALL DUCT W/(3) EQUALLY DIVIDED PARTITIONS THROUGHOUT W/ PARTITION CUT-OUTS AT OPENINGS.

3 TYPICAL WALL DUCT WITH J-BOX

SCALE: NOT TO SCALE

REVISED: 11-30-06


SURFACE MOUNTED WALL DUCT W/(3) EQUALLY DIVIDED PARTITIONS THROUGHOUT.
45° SECTION FOR ALL WALL DUCT CORNERS.
SURFACE MOUNTED FLOOR DUCT W/(3) EQUALLY DIVIDED PARTITIONS THROUGHOUT.
OPTIONAL 45° EDGES OR AS PER CODE (FIELD VERIFY).

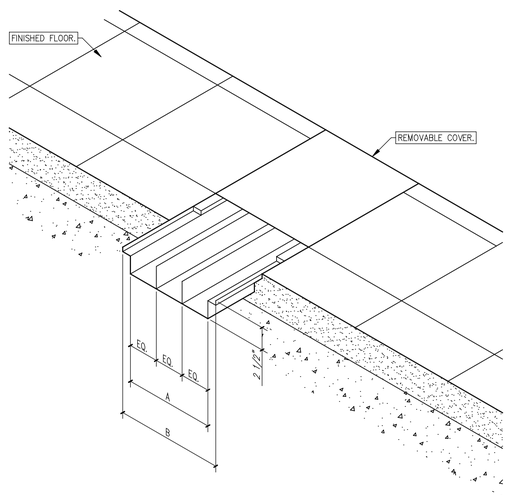
NOTE:
CUSTOMER'S CONTRACTOR TO VERIFY LOCATION OF J-BOX(ES) FOR CABLE PULL TO WALL DUCT.
CUSTOMER'S CONTRACTOR TO VERIFY LOCATION OF GROMMETED OPENINGS IN WALL DUCT W/ TOSHIBA REP.

4 TYPICAL SURFACE MOUNTED FLOOR DUCT W/ "VR"

SCALE: NOT TO SCALE

REVISED: 11-30-06

10" TRENCH DUCT:	A = 10" B = 12"
18" TRENCH DUCT:	A = 18" B = 20"
24" TRENCH DUCT:	A = 24" B = 26"
30" TRENCH DUCT:	A = 30" B = 32"

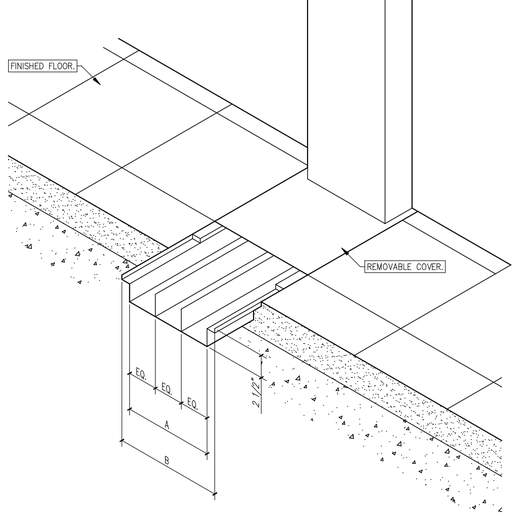


5 TYPICAL FLUSH MOUNTED TRENCH DUCT

SCALE: NOT TO SCALE

REVISED: 11-30-06

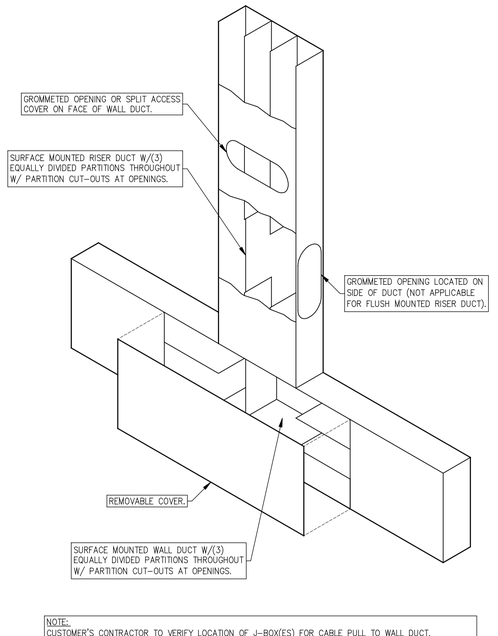
10" TRENCH DUCT:	A = 10" B = 12"
18" TRENCH DUCT:	A = 18" B = 20"
24" TRENCH DUCT:	A = 24" B = 26"
30" TRENCH DUCT:	A = 30" B = 32"



6 TYPICAL FLUSH MOUNTED TRENCH DUCT W/ "VR"

SCALE: NOT TO SCALE

REVISED: 11-30-06

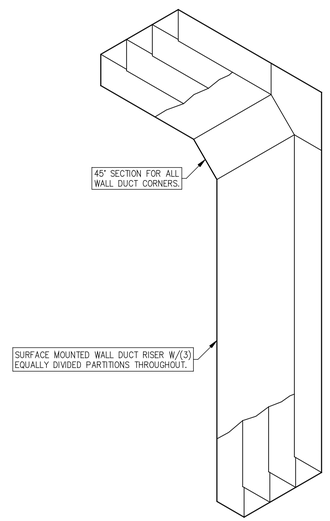

GROMMETED OPENING OR SPLIT ACCESS COVER ON FACE OF WALL DUCT.
SURFACE MOUNTED RISER DUCT W/(3) EQUALLY DIVIDED PARTITIONS THROUGHOUT W/ PARTITION CUT-OUTS AT OPENINGS.
GROMMETED OPENING LOCATED ON SIDE OF DUCT (NOT APPLICABLE FOR FLUSH MOUNTED RISER DUCT).
REMOVABLE COVER.
SURFACE MOUNTED WALL DUCT W/(3) EQUALLY DIVIDED PARTITIONS THROUGHOUT W/ PARTITION CUT-OUTS AT OPENINGS.

NOTE:
CUSTOMER'S CONTRACTOR TO VERIFY LOCATION OF J-BOX(ES) FOR CABLE PULL TO WALL DUCT.
CUSTOMER'S CONTRACTOR TO VERIFY LOCATION OF GROMMETED OPENINGS IN WALL DUCT W/ TOSHIBA REP.

7 TYPICAL WALL DUCT W/ VERTICAL RISER

SCALE: NOT TO SCALE

REVISED: 11-30-06



NOTE:
CUSTOMER'S CONTRACTOR TO VERIFY LOCATION OF J-BOX(ES) FOR CABLE PULL TO WALL DUCT.
CUSTOMER'S CONTRACTOR TO VERIFY LOCATION OF GROMMETED OPENINGS IN WALL DUCT W/ TOSHIBA REP.

8 TYPICAL CEILING DUCT

SCALE: NOT TO SCALE

REVISED: 11-30-06

TOSHIBA

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REV.	DATE	DESCRIPTION	INT.

(MRI SCAN ROOM – VANTAGE/TITAN)

TYPICAL DRAWING

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DATE: **01-07-08**

SCALE: **AS NOTED**

DRAWN: **G.S.P.**

QUOTE: N/A

PROJECT NO.
TYPICALS

E5

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